

DSR-20/20P

RMT-DS20

SERVICE MANUAL

US Model
Canadian Model
DSR-20
AEP Model
DSR-20P

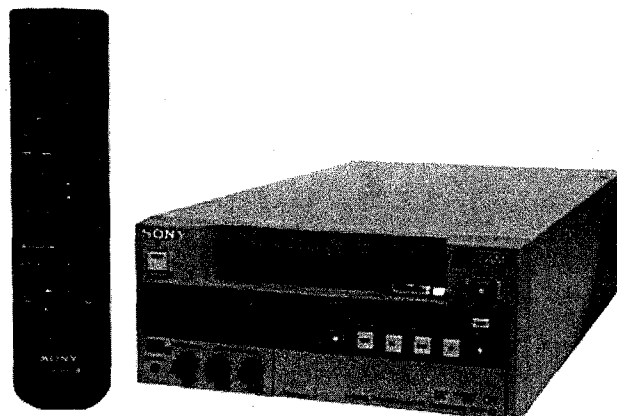


Photo: DSR-20

E MECHANISM

SPECIFICATIONS

System

Recording format DVCAM format

Video signal

DSR-20: EIA STANDARD, NTSC color system

DSR-20P: CCIR STANDARD, PAL colour system

Usable cassettes Standard-DVCAM cassettes and Mini-DVCAM cassettes

Recording time 184 minutes (when using the PDV-184ME cassette)
40 minutes (when using the PDVM-40ME cassette)

Clock

Quartz locked

DSR-20: 12-hour cycle display

DSR-20P: 24-hour cycle display

Power back-up Built-in self-charging capacitor
Back-up duration: up to 100 hours

Inputs and outputs

Video input

BNC connector
Input signal: 1 Vp-p
(75 ohms unbalanced)

Video output

BNC connector
Output signal: 1 Vp-p
(75 ohms unbalanced)

S VIDEO input

Mini DIN 4-pin
Luminance signal: 1 Vp-p
(75 ohms unbalanced)
Chrominance signal:
0.286 Vp-p (DSR-20)
0.3 Vp-p (DSR-20P)
(75 ohms unbalanced)

S VIDEO output

Mini DIN 4-pin
Luminance signal: 1 Vp-p
(75 ohms unbalanced)
Chrominance signal:
0.286 Vp-p (DSR-20)
0.3 Vp-p (DSR-20P)
(75 ohms unbalanced)

Audio input

Phono jack (L, R)
Input level: 2 Vrms (full bit)
Input impedance: more than
47 kohms

Audio output

Phono jack (L, R)
Output level: 2 Vrms (full bit)
Output impedance: less than
10 kohms

Monitor output

BNC connector
Output signal: 1 Vp-p
(75 ohms unbalanced)

— Continued on next page —



DIGITAL VIDEO CASSETTE RECORDER



SONY®

Control S input/output
Minijack (2)

LANC input/output
Stereo mini-mini jack (1)

RS-232C input/output
D-sub 9-pin (1)

Headphones output
Stereo minijack (1)

DV IN / OUT 4-pin jack (1)

General

Power requirements

DSR-20: 120 V AC, 60 Hz
12 V DC, 2.0 A (4.0 A at the peak)

DSR-20P: 220 – 240 V AC, 50 Hz
12 V DC, 2.0 A (4.0 A at the peak)

Power consumption

DSR-20: 0.45 A, 120 V AC, 60 Hz

DSR-20P: 0.35 A, 220 – 240 V AC, 50 Hz
(during playback)

Operating temperature

5°C to 40°C (41°F to 104°F)

Storage temperature

–20°C to +60°C (–4°F to +140°F)

Dimensions

Approx. 212 × 98 × 392 mm
(8 3/8 × 3 7/8 × 15 1/2 inches)
(w/h/d, including projecting parts
and controls)

Mass

Approx. 5 kg (11 lb.)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
AC power cord (1)
Cleaning cassette (1)

Design and specifications are subject to change
without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE \triangle SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

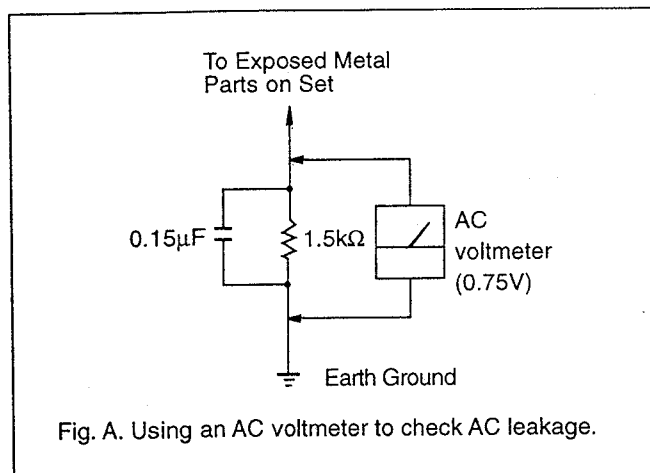
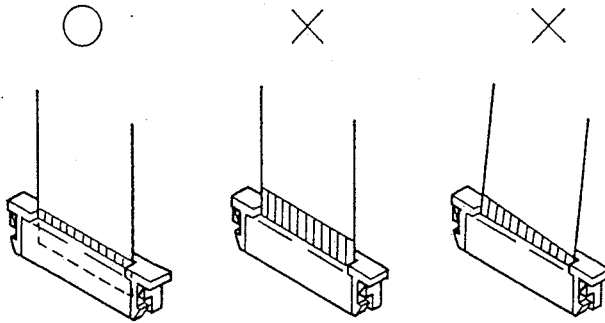


Fig. A. Using an AC voltmeter to check AC leakage.

SERVICE NOTE

• Note for Repair

Make sure that the flat cable and flexible board are not cracked or bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



*Cut and remove the part of gilt which comes off at the point.
(Take care that there is some pieces of gilt left inside.)*

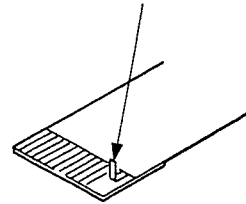


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SECTION 1 GENERAL

This section is extracted from DSR-20/20P instruction manual.

Features

The DSR-20/20P is a 1/2-inch digital video cassette recorder that uses the DVCAM digital recording format. This system achieves stable, superb picture quality by digitally processing video signals that are separated into color difference signals and luminance signals (component video). The unit is equipped with a full-fledged analog interface to support hybrid systems that combine conventional analog equipment with digital equipment.

The DSR-20/20P's main features are described below.

DVCAM Format

DVCAM is based on the consumer DV format, which uses the 4:1:1 component digital format, and provides a 1/2-inch digital recording format for professional use.

High picture quality, high stability

Video signals are separated into color difference signals and luminance signals, which are encoded and compressed to one-fifth size before being recorded to ensure stable and superb picture quality. Because the recording is digital, multi-generation dubbing can be performed with virtually no deterioration of quality.

Wide track pitch

The recording track pitch is 15 μ m, fully 50 percent wider than the DV format's 10- μ m track pitch. Thanks to this feature, the DVCAM format sufficiently meets the reliability and precision requirements of professional editing.

High-quality PCM digital audio

PCM recording makes for a wide dynamic range and a high signal-to-noise ratio, thereby enhancing sound quality.

There are two recording modes: 2-channel mode (48-kHz sampling and 16-bit quantization), which offers sound quality equivalent to the DAT (Digital Audio Tape) format, or 4-channel mode (32-kHz sampling and 12-bit quantization).

Playback compatibility with DV format

A DV cassette recorded on a DV-format VCR can be played back on this unit. (Cassettes recorded in LP mode cannot be played back.)

Choice of two cassette sizes

The unit can use both standard-size and mini-size DVCAM cassettes.

- According to cassette size, it automatically changes the position of the reel drive plate.
- The maximum recording/playback times are 184 minutes for standard size cassettes and 40 minutes for mini-size cassettes.

Other Features

Compact size

The unit achieves compact size suitable for using on a demonstration or a bridal. The unit is also equipped with basic functions that are needed for videocassette recorders and players used in professional digital video editing systems.

DC IN connector

The unit is equipped with the DC IN connector to use in the case that the AC power is not available.

Menu system for functionality and operation settings

The unit provides a menu system to make its various functions easier to use and set up its operation conditions.

Superimposition function

Time code, operation mode indications, menus, error messages, and other text data can be superimposed and output in analog composite video signals.

Remote control

The unit can be operated by remote control from an editing controller that supports the RS-232C interface or from a SIRCS[®]-system remote controller such as the optional DSRM-10 or SVRM-100A.

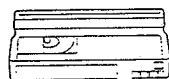
Features

Notes on Video Cassettes

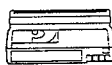
Usable cassettes

Use Standard-DVCAM cassettes or Mini-DVCAM cassettes with this VCR. PDV-184ME can record programs for 184 minutes and PDVM-40ME can record for 40 minutes.

You can get the highest quality pictures with this digital video cassette recorder using DVCAM cassettes. You may not be able to get as good quality with other cassettes. We recommend using DVCAM cassettes so that you can record your one-time events in highest quality.



DVCAM cassette



Mini DVCAM cassette

Cassette memory

Cassette memory is an optional feature that is mounted on some Standard DVCAM cassettes and Mini DVCAM cassettes. When you record a program, the recording date and time, and the programs' position on the tape are stored in the cassette memory so that you can quickly locate the program later on. CH16K indicates that you can use the cassettes 16 kbits of data can be stored on. On this VCR, you can use the cassettes up to 16 kbits of data can be mounted on.

To save a recording

To prevent accidental erasure of a recording, slide in the safety switch on the cassette so that the red portion becomes visible. To record on a tape, slide out the switch so that the red portion is hidden.

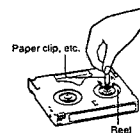


Note

DVCAM[®], DV[®], DV-[®] and CH[®] are trademarks.

Checking the tape for slack

Using a paper clip or a similar object, turn the reel gently in the direction shown by the arrow. If the reel does not move, there is no slack. Insert the cassette into the cassette compartment, and after about 10 seconds take it out.



Notes on Recording / Playing

Copyright precautions

On recording

You cannot record any software having copyright protection signals on this VCR. If you start recording protected video and audio signals, a warning message appears on the monitor screen and the VCR stops recording.

On playback

When you play back software having copyright protection signals on this VCR, you may not be able to copy it onto other equipment.

Limitations caused by the difference in format

This VCR can record, play back and edit the tapes recorded in DVCAM format. It can also play back the tapes recorded in DV format (SP mode). However, due to the difference in format, you may not be able to record or edit some tapes affected by recording conditions of the tape (e.g., A tape originally recorded in DV format is dubbed in DVCAM format). For details, refer to "Compatibility of DVCAM and DV format" on page 41.

No compensation for contents of the recording

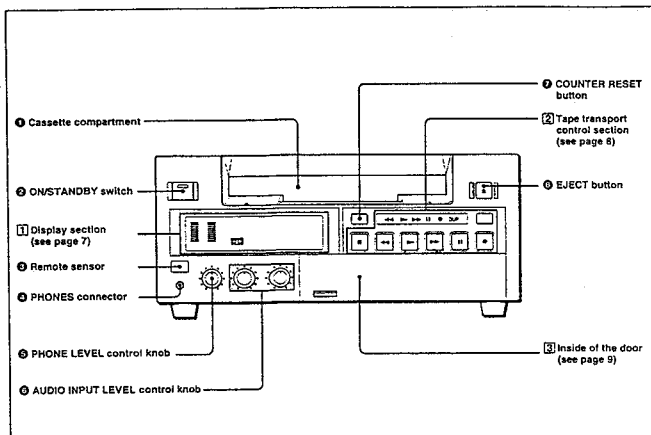
Contents of the recording cannot be compensated for if recording or playback is not made due to a malfunction of the VCR, video tape, etc.

Note

You cannot play back a DVCAM tape recorded in other color systems on this VCR.

Location and Function of Parts

Front Panel



1 Cassette compartment
Accepts standard-size or mini-size DVCAM digital videocassettes. When using a mini-size cassette, insert it into the middle of the compartment.
For details of usable cassettes, see page 4.

2 ON/STANDBY switch

3 Remote sensor

4 PHONES connector (stereo minijack)
Connect stereo headphones for headphone monitoring during recording or playback.
The audio signal you want to monitor can be selected with the AUDIO MONITOR switch inside of the door (3).

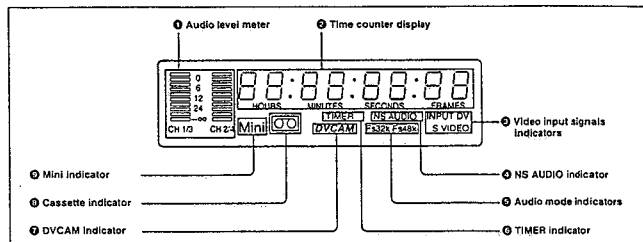
5 PHONE LEVEL control knob
Controls the volume of the headphones connected to the PHONES connector.

6 AUDIO INPUT LEVEL control knobs
When recording, you can use these knobs to set audio input levels for CH-1 (channel 1) and CH-2, respectively.

7 COUNTER RESET button
Press this button to reset the tape counter in the display window to "0:00:00 (0h00m00s)". This button does not work when displaying the time code or the remaining time.

8 EJECT button

1 Display section



1 Audio level meter
Indicates the recording level during recording or EE mode¹⁾ and the playback level during playback. When the audio level exceeds 0 dB, the red indicator lights.

2 Time counter display
Indicates the following:
• Time data: count value of the time counter, time code and remaining time
• Alarm messages (see page 36)
• Messages for self-diagnosis function (see page 39)

Notes
• For DSR-20P: Time code is set to the non drop frame mode only.
• Time code is indicated as follows:
Drop frame: "00:00:00:00" ("00:00:00:00" on the monitor) (DSR-20 only)
Non drop frame: "00:00:00:00"

3 Video input signals indicators
Indicates the currently selected video input signals. INPUT VIDEO, INPUT S VIDEO or INPUT DV lights.

4 NS AUDIO indicator
Lights when the VCR plays back a tape whose audio recording was made in the unlock mode, or when unlock mode signals are input through the DV terminals.
For details of unlock mode, see page 41.

5 Audio mode indicators
Indicates the audio mode during playback or recording or while in EE mode.

• During playback it indicates the audio mode in which the tape was recorded.
• During recording or while in EE mode, it indicates the currently selected audio recording mode. You can select audio recording mode by setting "AUDIO MODE" menu (see page 34).
Fs32k: Lights when playing the tapes recorded in 4-channel mode, or recording a tape in 4-channel mode.
Fs48k: Lights when playing the tapes recorded in 2-channel mode, or recording a tape in 2-channel mode.

Note
When recording in 4-channel mode on this VCR, audio signals are recorded only in channels 1/2.

6 TIMER indicator
Lights when setting the TIMER switch to REPEAT or REC.

7 DVCAM indicator
Lights when using the DVCAM-formatted tapes or recording a tape on DVCAM format.

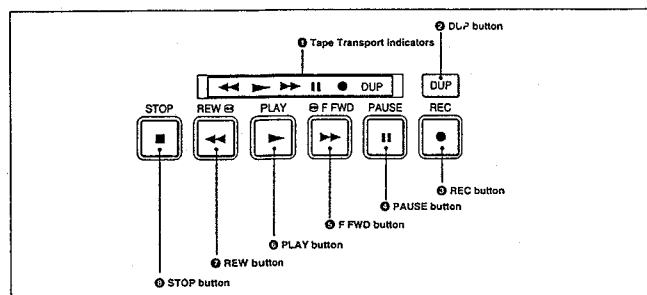
1) EE mode
"EE" stands for "Electric to Electric". When in this mode, the video and audio signals that are input to the VCR's recording circuitry do not pass through any magnetic conversion circuits but instead are output via electric circuits only. This mode is used to check input signals and adjust input levels.

Location and Function of Parts

3 Cassette indicator
Lights when inserting a digital video cassette available for this VCR. It flashes when ejecting a cassette.

3 Mini indicator
Lights when inserting mini-size digital video cassette.

2 Tape transport control section



1 Tape Transport indicators

2 DUP (duplicate) button
Use this button to make a work tape having the same time codes as the source tape.
For details of duplicate, see page 30.

3 REC (record) button
When you press the PLAY button while holding down this button, the indicator lights and recording begins. To set the VCR to recording pause mode, press this button while holding down the PAUSE button.

4 PAUSE button
When you press this button, the indicator lights and the VCR is set to pause mode.

5 F FWD (fast forward) button
When you press this button, the indicator lights and the tape is fast forwarded. During fast forward, the picture does not appear on the monitor (you can see the picture of the EE mode during fast forward). To search forward, press this button again during fast forward.

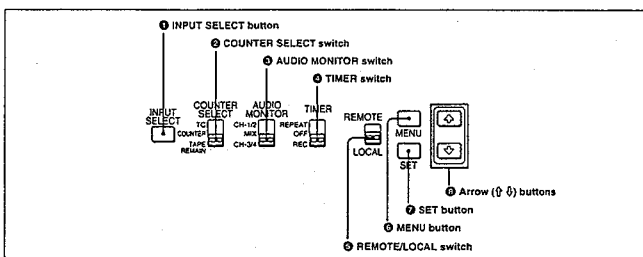
6 PLAY button
When you press this button, the indicator lights and playback begins.
If you press this button while holding down the REW button during stop, the tape is rewound to its beginning and starts playing automatically (during rewind, the REW indicator lights and the PLAY indicator flashes).

7 REW (rewind) button
When you press this button, the indicator lights and the tape is rewound to its beginning (if there is no index on the tape, to the unrecorded portion; if no unrecorded portion, to the tape end). To search backward, press this button again during rewind.

If you press the PLAY button while holding down this button during stop, the tape is rewound to its beginning and starts playing automatically (during rewind, the REW indicator lights and the PLAY indicator flashes).

8 STOP button
Press this button to stop the current tape transport operation.

3 Inside of the door



1 INPUT SELECT button
Select video input signals. Each press of this button cycles through three video signal selection options: video, S-video, and DV input. When you select one of these options, the corresponding indicator in the display lights up.

2 COUNTER SELECT switch
Select the type of time data in the time counter display.
TC: Time code
COUNTER: Count value of the time counter
TAPE REMAIN: Remaining time

3 AUDIO MONITOR switch
Use to select the audio track you want to hear when playing back a tape recorded in 4-channel mode (Fs32k).
CH-1/2: Channels 1/2 only
MIX: Channels 1/2 and channels 3/4 (mix)
CH-3/4: Channels 3/4 only

4 TIMER switch
Use to select timer recording or auto repeat using an external AC timer (not supplied).
REPEAT: When the power is supplied to this VCR, a tape rewinds to its beginning automatically and playback starts. The VCR repeats the playback from the beginning to the first index (if there is no index on the tape, to the unrecorded portion; if no unrecorded portion, to the tape end).
OFF: Timer is released.
REC: When the power is supplied to this VCR, recording starts.

5 REMOTE/LOCAL switch
Selects whether the unit is operated from its front panel or from external (remote) equipment.
REMOTE: The unit is operated from an editing controller connected to the REMOTE connector on the rear panel. No operation on the front panel works except sliding switches.
LOCAL: The unit is operated from its front panel, from an external equipment connected to the LANC jack on the rear panel, or from a SIRCS-system remote controller connected to the CONTROL S jack on the rear panel.

6 MENU button
Press this button to display the menu on the monitor screen. Press it again to return from the menu display to the usual display.

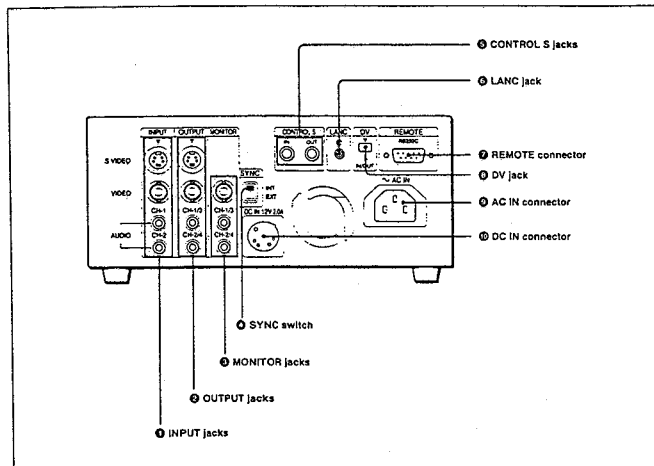
Note
If you set the REMOTE/LOCAL switch to REMOTE while the menu display is on the monitor, it returns to the usual display.
On how to use the menu, see Chapter 3 "Menu Settings".

7 SET button
Press this button to save selected menu items to the unit's memory.

8 Arrow (up/down) buttons
Use these buttons to move around the menu items.

Location and Function of Parts

Rear Panel



1 INPUT jacks

Input video and audio signals. To connect a VCR equipped with the S VIDEO OUT jack, use the S VIDEO jack on this VCR.

2 OUTPUT jacks

Output video and audio signals. To connect a VCR equipped with the S VIDEO IN jack, use the S VIDEO jack on this VCR.

3 MONITOR jacks

Output video and audio signals for monitoring.

4 SYNC switch

Selects the reference signal. The video signal is locked to V-sync or H-sync, but not locked to sub-carrier. The sync phase is not adjusted. The video signal is not locked to DV input.

INT: Selects the playback signal on this VCR as the reference signal.

EXT: Selects the input video signal from the external equipment connected to this VCR as the reference signal.

Notes

- The picture and the sound may be distorted if:
 - You set the SYNC switch during playback.
 - The analog signal is input from the INPUT jacks during playback with the SYNC switch set to EXT.
- If the SYNC switch is set to EXT during playback, the INPUT SELECT button does not work.

5 CONTROL S jacks

Connect a SIRCS-system remote controller so that you can operate a number of VCRs simultaneously. When controlling this VCR from an editing controller such as the DSRM-10 or SVRM-100A (not supplied), connect the unit to the editing controller via CONTROL S IN jack. Use CONTROL S OUT jack when making a cascade connection.

Note

SIRCS-system has the same function as CONTROL S-system.

6 LANC jack

When you connect the LANC jacks on this VCR and the other VCR, you can control this VCR (player) from the other VCR. The LANC connection transmits signals such as control signals, time code and time counter data and status data.

Notes

- The other VCR (recorder) receives the time code data from the LANC jack only when this VCR (player) is set to show the time code indications.
- If the REMOTE/LOCAL switch is set to REMOTE, the LANC connection does not transmit signals.

7 REMOTE connector (9-pin)

Connect an editing controller or a personal computer with the RS-232C interface for remote-control of this VCR.

Notes

- When you edit tapes connecting FXE-120 or FXE-100 and using this VCR as a player, set the RS-232C baud rate of the both units to 19200bps.
- When you edit tapes connecting FXE-120 or FXE-100 and using this VCR as a recorder, use the LANC interface box IF-FXE2.

8 DV jack

The DV jack is i.LINK compatible. Use when the equipment connected to the VCR has a DV jack. If you connect the VCR and the other equipment using DV jacks, you can minimize deterioration of picture quality during dubbing, editing or capturing still pictures into a personal computer by digital processing. For details, refer to the instruction manual of the equipment you use.

Note

i is a trademark of Sony Corporation and indicates that this product is in agreement with IEEE1394-1995 specifications and their revisions.

9 AC IN connector

Connect to an AC power outlet using the supplied power cord.

10 DC IN connector

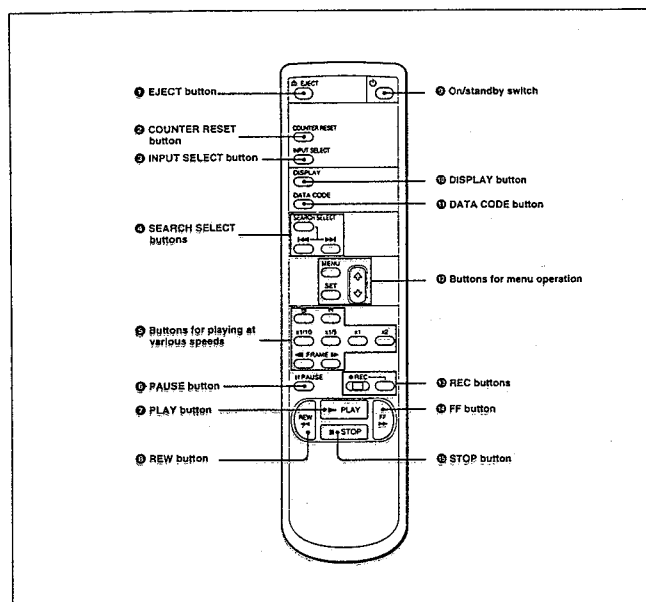
Connect to an DC power source. Use the DC power source whose voltage is 11 - 17 V and electric current is over 2.0 A (4.0 A at the peak). When the AC power outlet and the DC power source are connected to the VCR at the same time, the latter is automatically selected.

Notes

- If the voltage of the DC power source (e.g., a battery) falls less than 11 V, a beep sound is output (when BEEP in the menu is set to OFF, it is not output) and "dolo" appears in the display window. Replace the battery by a charged one or remove it to use the AC power outlet.
- If the voltage of the DC power source falls less than 10.5 V, a beep sound is output (when BEEP in the menu is set to OFF, it is not output) and the VCR is set to the standby mode. As you cannot turn on the VCR at this moment, replace the battery by a charged one or remove it to use the AC power outlet. If the voltage falls still less, a circuit works to protect the battery from excessive discharge and the electric current is shut off. As leaving the battery for a long time may cause excessive discharge, remove it.
- Depending on the battery, the VCR may be set to the standby mode again after the circuit works, but it does not mean the trouble of the VCR. Remove the battery.

Location and Function of Parts

Supplied Remote Controller



1 EJECT button

2 COUNTER RESET button

3 INPUT SELECT button

4 SEARCH SELECT buttons

Press these buttons to search for scenes using the index function. For details, see "Searching using the index function" on page 19.

5 Buttons for playing at various speeds

- 1/10 button
- 1/5 button
- 1 button
- 2 button
- FRAME ADVANCE buttons

For details, see "Playing at various speeds" on page 18.

6 PAUSE button

7 PLAY button

8 REW button

9 On/standby switch

10 DISPLAY button

Press this button to see the indications, such as tape counter, on the monitor screen.

11 DATA CODE button

Press this button to see the tape information on the monitor screen.

For details, see "Displaying tape information" on page 22.

12 Buttons for menu operation

- MENU button
- SET button
- 0/9 buttons

13 REC buttons

When you press these buttons at the same time, the indicator lights and recording begins.

14 FF button

15 STOP button

Note

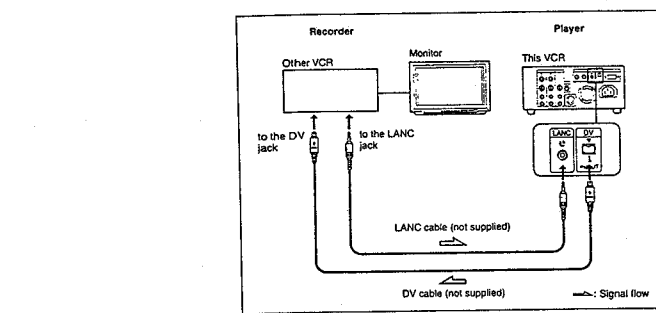
When using the supplied remote commander, set REMOTE CONTROL in the menu to VTR4 (see page 35). Otherwise, you cannot operate this VCR with the supplied remote commander.

Playback

Connections for Playback

To digital video equipment with DV connector

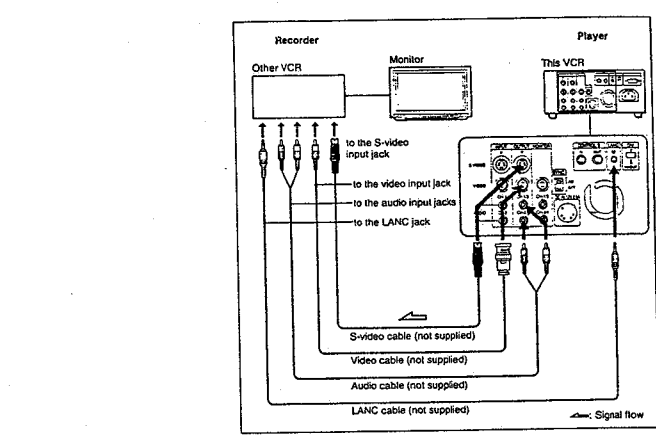
The video and audio signals are sent with hardly any degradation, enabling high-quality editing. The signal flow is automatically detected so you need not make separate connections for input and output.



Notes

- Set DV EE OUT in the menu to OFF (see page 35).
- Audio signals are not output during playing at various speeds.
- With the DV connection, the sound is recorded in the same audio recording mode as that of the source tape. To record in a different audio recording mode from the source tape, use the LINE connection instead.
- With the DV connection, tape information (recording date, camcorder data, etc.) recorded on the source tape is transmitted from this VCR (player). As a result, when you play back a recorded tape and press DATA CODE, the same tape information recorded on the cassette tape is displayed on the monitor screen. However, contents of the cassette memory are not transmitted. In addition, the time code is newly recorded on the tape on the other VCR, except when copying a tape in Duplicate mode.
- As for the LANC connection, see "Notes for LANC connection" on the next page.

To video equipment without DV jack



Notes

- When you connect output jacks of the recorder to input jacks of this VCR, select the input correctly to prevent a humming noise.
- Distorted signals (e.g., when played back at a speed other than normal) will not be recorded properly.
- The indications displayed on the monitor screen are output only via MONITOR jack.

Notes for LANC connection

- The LANC connection transmits signals such as control signals, time code, time counter data and status data.
- If the other VCR has a LANC jack of 5-pin DIN type, connect with the VK-810 Control L connecting cable (not supplied).
- The jacks labeled CONTROL L have the same function as LANC jacks. The jacks labeled REMOTE may also have the same.
- The other VCR (recorder) receives the time code data from the LANC jack only when this VCR (player) is set to show the time code indications.

Playback _____

Settings for Playback

Preparation on the player (this VCR)

- 1 Power on the video monitor, then set the monitor's input switches according to the input signals from the recorder.
- 2 Set up the recorder.
For details, see "Preparation on the recorder" below.
- 3 Power on this unit by pressing the ON/STANDBY switch.
- 4 If the other equipment that controls this VCR has the time code function, set the COUNTER SELECT switch to TC (see page 9).
- 5 When you play back an audio dubbed tape, set the AUDIO MONITOR switch to MIX (see page 9). Then select the precise balance between the tracks with the AUDIO MIX BALANCE in the menu (see page 34).

Note

With the DV connection, the playback VCR's AUDIO MONITOR (sound selection) and AUDIO MIX BALANCE (audio balance adjustment) do not function on the source audio output through the DV jack.

Preparation on the recorder

- Insert a tape for recording.
- Select the formats of video and audio input signal to be recorded.
- Set the LANC mode to M.

Notes

- Editing is not possible with a tape that is copyright protected.
- You cannot use the video equipment that has no LANC mode switch as a recorder.

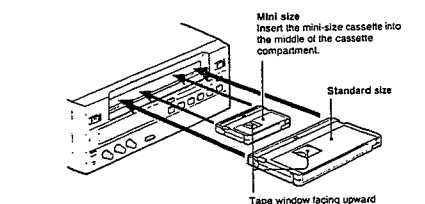
Playback Procedure

Notes

- When controlling this unit from an editing controller or a personal computer, set the REMOTE/LOCAL switch to REMOTE. When not, set the switch to LOCAL.
- Do not insert the cassette forcibly. The VCR may be damaged.

- 1 After checking the tape for slack, hold the cassette so that the tape window is facing upward, then insert it into this unit as illustrated below.

The cassette is automatically drawn into the unit.



- 2** Press the **PLAY** button.

This starts the playback operation.

Playback

Playback Functions

Playing at various speeds

You can enjoy playback functions using supplied remote controller.

Playback options	Operation
Play at 1/10 of normal speed	Press $\times 1/10$ during playback
Play at 1/5 of normal speed	Press $\times 1/5$ during playback
Play at normal speed	Press $\times 1$ during playback
Play at twice the normal speed	Press $\times 2$ during playback
Play frame by frame	Press FRAME \triangleleft (L) or \triangleright (R) during pause.

To hear the sound during playing at various speeds

If you want to hear the sound during playing at various speeds, set JOG WITH SOUND in the menu to ON (see page 34).

Searching using the index function

Three kinds of search are available on this VCR:

- Searching for the beginnings of recordings: Index search
- Searching for a point on the tape where the recorded date changes: Date search
- Searching for scenes recorded in the photo mode with a digital camcorder: Photo search

Searching in the list

If the tape has a cassette memory, the recordings are listed in the chronological order in the order they were made. You can search using this chronological list.

If the tape does not have a cassette memory, you cannot search for scenes in the chronological order.

- 1 Press SEARCH SELECT to select the search type: INDEX, DATE or PHOTO SEARCH.

The chronological list appears on the monitor screen.

INDEX SEARCH		CH
1	2/28/98 1:00:45	12
2	3/7/98 12:59:14	LINE
3	3/11/98 3:06:43	11
4	5/5/98 7:09:41	CAM
5	7/3/98 10:15:43	4
6	9/25/98 12:20:41	108
7	1/23/99 8:30:11	10
8	9/20/98 12:30:41	229

When selecting INDEX SEARCH (DSR-20)

- 2 Press \triangleleft or \triangleright to select a recording.

The VCR starts searching and when it locates the recording, begins playback. During Photo search, the VCR pauses.

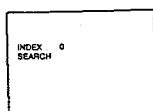
Playback

Searching in the order of the actual positions of the recordings on the tape

When you use a tape without a cassette memory, the VCR searches in the order of the actual positions of the recordings, regardless of the setting of CASSETTE MEMORY SEARCH in the menu.

When you use a tape with a cassette memory, set CASSETTE MEMORY SEARCH in the menu to OFF (see page 35).

- 1 Press SEARCH SELECT to select the search type.



When selecting INDEX SEARCH (DSR-20)

- 2 Press \triangleleft or \triangleright repeatedly to locate the recording you want.

The VCR starts searching backwards or forwards until the index number comes to zero, then plays back the recording. During Photo search, the VCR pauses.

How signals are recorded

The VCR marks the tape when REC is pressed.

There are three different signals for each search method. The type of signal recorded and where it is recorded (on the tape or in the cassette memory) depends on the video equipment used for recording. Please note that if the signals for certain search type are not recorded, you cannot do that type of search.

When you record with a Sony digital camcorder (DSR-200/200P, DSR-PD1/PD1P)

Signals for	In cassette memory	On tape
Index search*	No	No
Date search	Yes	Yes
Photo search	Yes	Yes

When you record on this VCR

Signals for	In cassette memory	On tape
Index search*	Yes	Yes
Date search	No	Yes
Photo search	No	No

* The signals for Index search are recorded when you start recording for the first time in stop mode.

Note

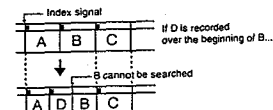
When recording on this VCR, signals for index search do not have information on a day of the week.

About the cassette memory

- If you use a tape with CH mark, the cassette memory stores up to 135 index signals. (The number changes depending on the data size combination of index, date, and photo data stored on a tape.) This VCR is capable of storing and retrieving up to 16 kbits of cassette memory.
- To locate recordings whose signals are disabled to be stored in the cassette memory, or to locate recordings in order of their position on the tape, set CASSETTE MEMORY SEARCH in the menu to OFF (see page 35). You can use the same procedure to search for a recording on a tape without cassette memory.

Notes

- Each program is indexed at its beginning. If you record another program over the beginning of the first program, you will not be able to locate the original program.



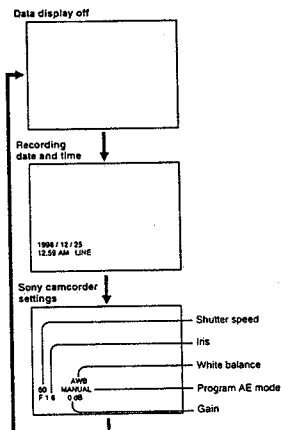
- You cannot add indexes after recording. To add indexes only for Auto Repeat, start recording from the point you want to start indexing.
- You cannot erase indexes after recording. To delete indexes for Auto Repeat, set INDEX WRITE in the menu to OFF (see page 35). Then record over the index signal you want to erase.
- Searching may not be done correctly if the signals were not recorded on a Sony-brand digital video equipment.

Playback

Displaying tape information

If you record on a tape using a Sony digital camcorder DSR-200/200P or DSR-PD1/PD1P, camcorder data (the shutter speed, program AE mode, white balance, iris and gain) can be recorded on the tape. You can check these data during playback on this VCR.

Press DATA CODE during playback.
Each time you press DATA CODE, the display changes as follows.



Notes

- When the information was not recorded, "--" appears instead.
- The camcorder data displayed on the monitor screen by this VCR are partially different from those shown by the digital camcorder.

Auto repeat

This VCR can repeat the playback of all or part of the tape.

- 1 Set the TIMER switch on the front panel to REPEAT.

The TIMER indicator on the front panel lights.

- 2 Press REW to rewind the tape to its beginning.

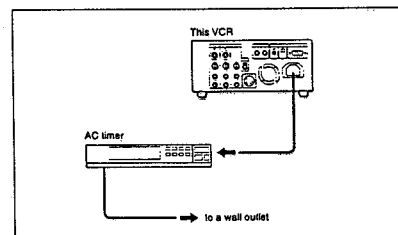
- 3 Press PLAY.

Playback starts automatically. The VCR repeats the playback from the beginning to the first index (if there is no index on the tape, to the unrecorded portion; if no unrecorded portion, to the tape end).

Auto Repeat using an external AC timer

If you connect an external AC timer (not supplied) to this VCR, you can repeat playback automatically at the preset time.

- 1 Connect an external AC timer (not supplied) to this VCR.



- 2 Set the TIMER switch on the front panel to REPEAT.

The TIMER indicator in the display window lights.

- 3 Set the timer-on time on the external AC timer.

At the preset time, the power turns on, and after a few seconds (no more than 30), Auto Repeat playback starts automatically. The VCR repeats the playback from the beginning to the first index (if there is no index on the tape, to the unrecorded portion; if no unrecorded portion, to the tape end).

Playback

Notes

- The VCR cannot search for an index or unrecorded portion within 20 seconds from the beginning of the tape.
- While a tape is running, do not turn off the power, using an AC timer. The VCR and a tape may be damaged. When turning off the power of the VCR, make sure to press STOP on this VCR first to stop the tape transport, then turn off the power.

To stop Auto Repeat
Press STOP.

To release Auto Repeat mode
Set the TIMER switch to OFF.

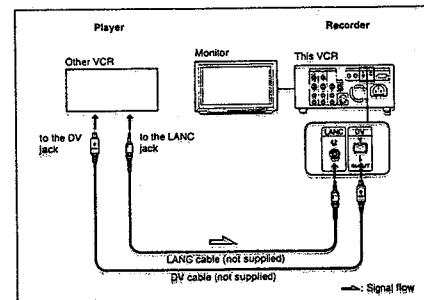
Recording

This section describes the necessary connections, settings and operations to perform recording on this unit. The same settings and operations apply whether you are using the unit as part of an editing system, for dubbing, or as a stand-alone recorder.

Connections for Recording

To digital video equipment with DV connector

The video and audio signals are sent with hardly any degradation, enabling high-quality editing. The signal flow is automatically detected so you need not make separate connections for input and output.

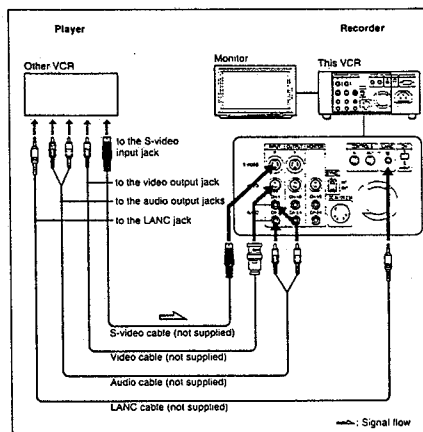


Notes

- Audio signals are not output during playing at various speeds.
- With the DV connection, the sound is recorded in the same audio recording mode as that of the source tape. To record in a different audio recording mode from the source tape, use the LANC connection instead.
- With the BV connection, tape information (recording date, camcorder data, etc.) recorded on the source tape is transmitted from the other VCR (player). As a result, when you play back a recorded tape and press DATA CODE, the same tape information recorded on the source tape is displayed on the monitor screen. However, contents of the cassette memory are not transmitted. In addition, the time code is newly recorded on the tape on this VCR, except when copying a tape in Duplicate mode.
- As for the LANC connection, see "Notes for LANC connection" on the next page.

Recording

To video equipment without DV jack



Notes

- When recording the analog input signals, this VCR can digitally output the signals from the DV jack for backup. Set DV EE OUT in the menu to ON (see page 35).
- When you connect output jacks of this VCR to input jacks of the player, select the input correctly to prevent a humming noise.
- Distorted signals (e.g., when played back at a speed other than normal) will not be recorded properly.
- The indications displayed on the monitor screen are output only via MONITOR jack.

Notes for LANC connection

- The LANC connection transmits signals such as control signals, time code and time counter data and status data.
- If the other VCR has a LANC jack of 5-pin DIN type, connect with the VK-810 Control L connecting cable (not supplied).
- The jacks labeled CONTROL L has the same function as LANC jacks. The jacks labeled REMOTE may also have the same.
- This VCR (recorder) receives the time code data from the LANC jack only when the other VCR (player) is set to show the time code indications.

Recording

- 6 When using the LINE connections (INPUT jacks), select the audio mode.

Select the desired mode by setting the AUDIO MODE menu.

Audio mode	Set the menu to
2-channel mode	Fs48k
4-channel mode	Fs32k

On how to use the menu, see Chapter 3 "Menu Settings".

Notes

- In the DVCAM format, there are two audio recording modes, with either two channels at 48 kHz or four channels at 32 kHz. It is not possible to select other modes (for example with four channels at 48 kHz).
- When recording in 4-channel mode on this VCR, audio signals are recorded only in channels 1/2.
- Once you have started recording, you cannot change the audio mode selection.

- 7 Use the AUDIO INPUT LEVEL control knobs to adjust audio input levels.

Watching the audio level meter (see page 7), adjust the level so that the meter does not indicate higher values than 0 dB when the audio signal is at its maximum.

When the level exceeds 0 dB, sound distortion occurs.

Preparation on the player

- Insert a source tape.
- If the player VCR has an EDIT switch, set it to ON.
- Turn off the on-screen display.
- Set the LANC mode to M.

Note

With the DV connection, the playback VCR's AUDIO MONITOR (sound selection) and AUDIO MIX BALANCE (audio balance adjustment) do not function on the source audio output through the DV jack.

Settings for Recording

Preparation on the recorder (this VCR)

Notes

- Before recording, set the clock on the VCR so that the recording time can be written into the index signal. You can set the clock by setting the CLOCK SET menu (see page 35).
- When controlling this unit from an editing controller or a personal computer connected to REMOTE connector, set the REMOTE/LOCAL switch to REMOTE. When not, set the switch to LOCAL.
- Editing is not possible with a tape that is copyright protected.

- Power on the video monitor, then set the monitor's input switches according to the input signals from this unit.
- Set up the player to play back a tape.
For details, see "Preparation on the player" on the next page.
- Power on this unit by pressing ON/STANDBY switch.
- Use COUNTER SELECT switch to select the type of time data to be used.

Type of time data	Set the switch to
Count value of the time counter	COUNTER
Time code	TC

- Select the formats of video and audio input signal to be recorded.

Press INPUT SELECT to select the desired signal formats. Each press of this button cycles through three video signal selection options: video, S-video, and DV input. Each selection is shown by a lit indicator in the display window.

Note

Once you have started recording, you cannot change the input signal selection (except during recording pause mode).

Recording Procedure

Note

When controlling this unit from an editing controller connected to the REMOTE connector, set the REMOTE/LOCAL switch to REMOTE. When not, set the switch to LOCAL.

- After checking that the cassette's safety switch is set to write enabled position and the tape for slack, hold the cassette so that the tape window is facing upward, then insert it into this unit as illustrated below.
For details of the cassette's safety switch, see page 4. For details of checking the tape for slack, see page 5.

The cassette is automatically drawn into the unit and the tape is wound round the head drum. The tape is stationary while the head drum rotates.

- Press the PLAY button on the player.
This starts the player's playback operation.
- Press and hold the REC button, and press the PLAY button.
This starts the recorder's recording operation.

Recording

Duplicate

If you copy a source tape, using the DUP (duplicate) button on this VCR, you can copy the time code recorded on the source tape as they are. You can easily make a work tape having the same time codes as the source tape.

The duplicate function on this VCR works only when using a source tape recorded in DV CAM format and making DV connections.

- 1 Connect this VCR and the other (playback) VCR, using a DV cable and select DV with INPUT SELECT on this VCR.
- 2 Locate the points where you want to start playback and recording.
- 3 Press STOP to stop the tape transport operation.
- 4 Press and hold the DUP button, and press the PLAY button.

The DUP indicator flashes and this VCR enters into recording standby mode.

Notes

- If the other (playback) VCR has already started playback, the DUP indicator lights and duplicate starts immediately.
- If the other (playback) VCR is in the playback pause mode, duplicate starts immediately and this VCR continues to record a still picture and a certain time code.

- 5 Press the play button on the other VCR to start playback.

The DUP indicator lights and duplicate starts.

To adjust the point where duplicate starts

In step 4 above, press and hold the DUP button instead of the PLAY button, and press the PAUSE button. This VCR remains recording standby mode until you press PAUSE again.

After the other VCR starts playback, press PAUSE button at the point where you want to start duplicate.

To stop duplicate:
Press STOP.

Notes

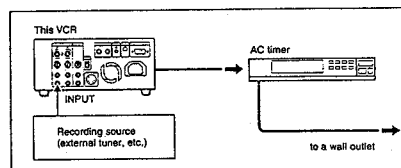
- During duplicate, do not change the speed of the player's tape or set it to pause mode. Otherwise, the time code of the recorded tape becomes out of sequence and you cannot use it for editing.
- During duplicate, time counter does not appear. Check it in the other VCR.
- When you start duplicating, the first part of the source tape may be dropped on the copied tape.
- You may not be able to copy the first part or an unrecorded portion of the source tape. Locate the recorded portion on the source tape, then start copying.
- The recording does not stop the moment you press STOP to stop editing. The source picture may be recorded a little longer than you expected.
- If you duplicate a tape by using two DSR-20s, set DV EE OUT in the menu of the player to OFF (see page 33).
- The index signals are not recorded when the duplicate starts.
- If you set the REMOTE/LOCAL switch to REMOTE during duplicate, the tape stops.

Recording

AC timer recording

By connecting this VCR to an external AC timer (not supplied), you can start recording at a preset time.

- 1 Connect this VCR to an external AC timer (not supplied).



- 2 Insert a tape for recording.
- 3 Press INPUT SELECT to select the recording source.
- 4 Set the timer-on time on the connected AC timer.

At the preset time, the power of this VCR and the recording source turn on automatically and recording starts about several to 10 seconds later. Set the timer allowing a margin for the recording to start.

- 5 Set the TIMER switch at the front to REC.

You need not press REC.

If the tape ends before the recording source stops operation
The tape stops without rewinding.
If you set the AUTO REWIND in the menu to ON, the tape rewinds to its beginning automatically (see page 35).

To stop recording during the timer recording
Press STOP.

To release AC timer recording
Set the TIMER switch to OFF.

Note

While a tape is running, do not turn off the power using an AC timer. The VCR and a tape may be damaged. When turning off the power of the VCR, make sure to press the STOP button on this VCR first to stop the tape, then turn off the power.

Connecting Other Equipment

For usage, connections, etc., refer to the instruction manual of the equipment to be connected.

Connecting an editing controller

You cannot execute video/audio insert editing. Only assemble editing is available with this VCR.

Notes

- When you edit tapes connecting FXE-120 or FXE-100 and using this VCR as a player, set the RS-232C baud rate of the both units to 19200bps.
- When you edit tapes connecting FXE-100 and using this VCR as a recorder, you need to upgrade FXE-100 by using FXE-KIT1 (not supplied).
- When you edit tapes connecting FXE-120 or FXE-100 and using this VCR as a recorder, you cannot directly connect the units. Use the LANC interface box IF-FXE2.

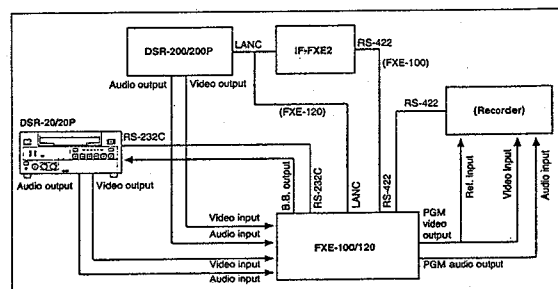
Connecting a titler and a digital SEG

When connecting a titler and a digital SEG equipped with the S VIDEO jack, use the S VIDEO connection.

Making a tape duplication system by connecting a number of DSR-20/20P units

- Make sure to use an audio/video distributor. If you make a loop connection, picture and sound may deteriorate.
- When using a CONTROL S jack, you can make a loop-through connection. Check the command mode of the wired remote commander and set the same mode on this VCR by the REMOTE CONTROL menu (see page 35).
- You cannot use the following remote commanders with this VCR:
RM-250, RM-S18 and RM-S52A.

An example of the tape duplication system



Changing Menu Settings

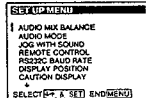
This VCR has various functions available, and you can set and check them on the monitor screen. Before operation, set the clock by setting the **CLOCK SET** menu. You can change the menu settings on the **SET UP MENU** screen. If necessary, change the settings manually during editing, etc.

Changing the SET UP MENU Settings

Follow the instructions below to change the settings.

1 Press MENU.

The **SET UP MENU** appears on the monitor screen. To cancel the menu settings, press **MENU** again.



2 Press \uparrow/\downarrow buttons to select the option you want to change, and press SET button.

Each menu option appears on the monitor screen (see the table below).

3 Press \uparrow/\downarrow buttons to change the setting, and press SET button.

The menu disappears from the monitor screen.

Menu Contents

Initial settings are indicated in bold letters.

Menu options	Set this option to	Description of settings
AUDIO MIX BALANCE		If you set the AUDIO MONITOR switch to MIX , you can select the precise balance between channels 1/2 and channels 3/4 by five steps.
AUDIO MODE	Fs48k Fs32k	<ul style="list-style-type: none"> To set the audio mode to 2-channel mode (16bit mode). This mode uses the whole audio area to record one stereo track. You can get higher sound quality. To set the audio mode to 4-channel mode (12bit mode). This mode separates the audio area into 2 parts. You can record two kinds of audio, stereo 1 and stereo 2. When recording on this VCR, audio signals are recorded only in channels 1/2.
JOG WITH SOUND	ON OFF	<ul style="list-style-type: none"> To listen to the sound when playing a tape in various speeds. To turn off the sound.

Alarm Messages

Various messages appear on the monitor screen ("Err" appears in the display window). Check them with the following list.

Message	Meaning / Remedy
PLEASE CONFIRM THE SAFETY SWITCH OF THE CASSETTE	Check that the protect tab is slid in so that the red portion visible. → Slide back the safety switch (see page 4).
NO CASSETTE MEMORY	You try to erase cassette memory.
VCR IS RECORDING	You press a certain operation button during recording or editing.
PLEASE INSERT A NEW CASSETTE	Though no cassette is inserted in the cassette compartment, you press PLAY , etc. → Insert a cassette.
THE TAPE IS REWOUND	You press REW during at the beginning of the tape.
PLEASE REWIND OR INSERT A NEW CASSETTE	You try to start playback or recording at the tape end. → Rewind the tape or insert a new cassette.
PLEASE SET THE CLOCK	When turning on the power, the clock has not been set. → Set the clock in the menu (see page 35).
THIS PROGRAM IS COPYRIGHT PROTECTED	You try to dub the tape on which copyright protect signals are recorded.
CASSETTE MEMORY IS TOO LARGE TO ERASE	You try to erase "INDEX DATA," "DATE DATA," or "PHOTO DATA" on a tape having more than 16 kbits memory capacity. → Erase "ALL DATA" on the tape (see page 35).
WRITING ON CASSETTE MEMORY. PLEASE WAIT	You do certain operation while the VCR is writing on cassette memory. → Operate after writing on cassette memory is complete.
VCR IS IN DUP MODE	You press a certain operation button during duplicate.

Menu options	Set this option to	Description of settings
REMOTE CONTROL		Set the command mode (VTR1-6, INST) on this VCR. Change this setting when using infrared remote commander or external (remote) equipment to remotely control the unit. When using the supplied remote commander, select VTR4 (initial setting). When using the remote controller such as the optional DSRM-10 or SVRM-100A , select INST . When selecting OFF , you cannot remotely control the unit.
RS232C BAUD RATE	9600bps 19200bps	<ul style="list-style-type: none"> To set the baud rate with an editing controller that supports RS-232C interface to 9600bps. To set the baud rate to 19200bps.
DISPLAY POSITION	CENTER LOWER RIGHT	<ul style="list-style-type: none"> To display the tape counter in the center of the monitor screen. To display the tape counter in the lower right of the monitor screen.
CAUTION DISPLAY	ON OFF	<ul style="list-style-type: none"> To display the error message on the monitor screen. To not display the error message.
BEEP	ON OFF	<ul style="list-style-type: none"> To output a beep sound when an illogical operation is made. To deactivate it.
INDEX WRITE	AUTO OFF	<ul style="list-style-type: none"> To record index signals when recording begins. To not record index signals.
CASSETTE MEMORY SEARCH	AUTO OFF	<ul style="list-style-type: none"> To search recordings with the cassette memory. If the tape does not have a cassette memory, the VCR will search recordings using index signals recorded on the tape itself. To search recordings using the index signals recorded on the tape.
CASSETTE MEMORY ERASE	ALL DATA INDEX DATA DATE DATA PHOTO DATA	<ul style="list-style-type: none"> To erase all the data in the cassette memory. To erase index data in the cassette memory. To erase date data in the cassette memory. To erase photo data in the cassette memory. <p>NOTE When using the cassette whose memory can store over 16 kbits of data, you can only select ALL DATA.</p>
TIME CODE (DSR-20 only)	AUTO NDF DF	<ul style="list-style-type: none"> To set the time code to the same one as already recorded on the tape. To set the time code to Non Drop Frame. To set the time code to Drop Frame. <p>NOTE If you use AUTO and start recording at the beginning of the tape, the time code is set to Non Drop Frame.</p>
AUTO OFF	ON OFF	<ul style="list-style-type: none"> To turn off the VCR automatically if there is no operation and the tape stops for an hour (Auto Off). To deactivate Auto Off.
AUTO REWIND	ON OFF	<ul style="list-style-type: none"> To rewind the tape to its beginning automatically if the tape reaches to an end (Auto Rewind). To deactivate Auto Rewind.
PHOTO PB	FIELD FRAME	<ul style="list-style-type: none"> To prevent the picture from blurring when playing a tape recorded in photo mode. To see clear picture when playing a still picture. <p>NOTE When using FRAME, the picture recorded in photo mode may blur.</p>
CLOCK SET		Set the clock on this VCR so that the recording time can be written into the index signal. Using \uparrow/\downarrow and SET buttons, set the date and time.
HOURS METER		The digital hours meter keeps cumulative counts of the head drum rotation time and the number of unthreading operations. These counts can be displayed on the monitor screen and are unresettable.
	DRUM ROTATION THREADING	<ul style="list-style-type: none"> The cumulative total hours of drum rotation with tape threaded is displayed in 10-hour increments. The cumulative number of tape unthreading operation is displayed in 10-operation increments.
DV EE OUT	ON OFF	<ul style="list-style-type: none"> To output the selected line input signals from the DV jack. To output only playback video and audio signals from the DV jack.

Notes on Use

Notes on the video cassette recorder

Do not install the unit in a place subject to direct sunlight or heat sources. If you do, its cabinet, mechanical parts, etc., may be damaged.

Do not install the unit in an extremely hot place. If the unit is left in a car parked with its windows closed (especially in summer), its cabinet may be damaged or it may not work correctly.

If the unit is brought directly from a cold to a warm location. Moisture may condense inside the unit and cause damage to the video head and tape. If you use the unit in a place subject to direct cold currents from an air conditioner, moisture may also condense inside the unit.

Do not place a heavy objects on the unit. The cabinet may be damaged, or the VCR may not work correctly.

Do not handle the recorder roughly. Avoid rough handling or mechanical shock.

To avoid damaging the cabinet finish. Plastic is often used for the surface finishing of the recorder. Do not spray a volatile solvent such as an insecticide toward the cabinet or place rubber or vinyl products on the cabinet for a long time. If you do, the finish of the cabinet may be damaged or the coating may come off.

Do not clean the cabinet with thinner or benzine. The cabinet may be damaged or its coating may come off. When you use a chemical-impregnated cloth, use it according to its directions.

Clean the cabinet with soft dry cloth. When the cabinet is very dirty, clean it with a soft dry cloth lightly moistened with a mild detergent solution and finish it with dry cloth.

Do not put magnetic objects close to the unit. Magnetic fields may damage the recording.

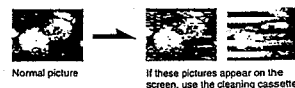
Checking the video heads every 1000 hours. A VCR is a high-precision piece of equipment that records and plays back the picture on a magnetic tape. In particular, the video head and other mechanical parts become dirty or worn. To maintain a clean picture, we recommend maintenance every 1000 hours, though the using condition may differ depending on temperature, humidity, dust, etc.

Cleaning of the video heads

If the video heads are contaminated, the pictures cannot be recorded properly or the playback pictures become noisy. If the following phenomena occur, use the cleaning cassette **DVM-12CLE** (supplied) or **DV-12CL** (not supplied) to clean the heads.

- Square-shaped noise appears on the playback picture.
- A part of the playback picture does not move.
- The playback picture does not appear on the screen.

Symptoms caused by contaminated video heads



To use the cleaning cassette. Refer to your cleaning cassette's operating instructions.

After prolonged use, the video heads may become worn out. If optimum picture quality is not restored even after you have cleaned the video heads with the cleaning cassette, the video heads may have worn out. In that case, you have to replace the video heads with new ones. Please consult your Sony dealer.

Notes on Use

Notes on the video cassettes

Cleaning the terminal

If the terminal of the Standard-DVCAM or Mini-DVCAM cassette gets dirty, or dust sticks to the terminal, the VCR may not work correctly. Clean the terminal with the swab once every ten times you eject a cassette.



When affixing a label on the cassette

Be sure to affix a label on only the correct location so as not to cause malfunction of the VCR.

After using a cassette

After use, please be sure to rewind the tape completely (to prevent picture and sound distortion). Return it to its case and store in upright position.

About moisture condensation

If the unit or tape is brought directly from a cold to a warm location, moisture may condense inside or outside the unit or tape. If you use the tape or video heads in this condition, the tape may adhere to the head drum, and the video heads or the tape may be damaged, or malfunction may occur.

Moisture condensation is likely to occur under the following conditions:

- The unit is brought from the cold outdoors to a warm indoor location.
- The unit is brought from the air-conditioned indoors to the hot outdoors.
- The unit is used in a place subject to cold currents from an air conditioner.

When bringing the unit from a cold place to a warm place or vice versa, put it in a plastic bag and seal the bag tightly. After bringing it into the new place, leave the bag on for about an hour, and remove the bag when the air temperature inside it has reached the temperature surrounding it.

If moisture condensation occurred

You cannot operate the unit except to press EJECT. If you insert a cassette, it is ejected automatically. If this occurs, turn on the power, wait about an hour for the moisture to evaporate.

Digital hours meter

The digital hours meter keeps cumulative counts of the head drum rotation time and the number of unthreading operations. These counts can be displayed on the monitor screen. Use them as guidelines for scheduling maintenance.

In general, consult your Sony dealer about necessary periodic maintenance checks.

The digital hours meter has the following two display modes and you can check them in the HOURS METER menu (see page 35).

• DRUM ROTATION mode

The cumulative total hours of drum rotation with tape threaded is displayed in 10-hour increments.

• THREADING mode

The cumulative number of tape unthreading operation is displayed in 10-operation increments.

Self-diagnosis function

The unit is equipped with the self-diagnosis function that works to prevent the VCR from malfunctioning. A two-digit service number appears in the display window. In this case, check the following table.

Message	Symptom	Remedy
32	To prevent the unit from malfunctioning, the self-diagnosis function has worked.	• Disconnect the power cord. After reinstalling the power source, operate the unit. • Remove the cassette or turn on/off the unit.
21	Moisture condensation has occurred.	Remove the cassette and leave the unit for at least 1 hour.

Compatibility of DVCAM and DV Format

DVCAM format is developed as a more reliable and higher end format than consumer DV format. Here are explained about DVCAM and DV formats: the differences, compatibility, and limitations on editing.

Differences between DVCAM and DV format

Item	DVCAM	DV
Track pitch	15µm	10µm
Audio sampling frequency	12bit: 32kHz 16bit: 48kHz	12bit: 32kHz 16bit: 32kHz, 44.1kHz, 48kHz
Audio recording mode ¹⁾	Lock mode	Unlock mode
Time mode	Drop frame system (DSR-20 only) or Non-drop frame system	Drop frame system only

- 1) There are two modes for audio recording. Lock mode and Unlock mode. In Lock mode, the sampling frequencies of audio and video are synchronized. In Unlock mode, which consumer DV format adopts, the two sampling frequencies are independent. Therefore, lock mode is more effective than unlock mode in digital processing and smooth transition during audio editing.

DVCAM and DV cassettes

Both DVCAM and DV cassettes can be used on DVCAM or DV video equipment. The recording format of picture is defined according to recorder's format as described below.

Recorder's format	Cassette's format	Recording format
DVCAM	DVCAM DV	DVCAM
DV	DVCAM DV	DV

- This digital videocassette recorder complies with DVCAM format. Though DV cassettes can be used for recording, we recommend you to use DVCAM cassettes to get the most out of high reliability of DVCAM format.
- The recording time of DV cassettes is 2/3 shorter than that indicated on the DV cassettes.

Compatibility on playback

Some tapes cannot be played back on DVCAM or DV video equipment.

Tape	On DV video equipment	On DVCAM video equipment
DV-formatted	Can be played back	Can be played back (only when recorded in SP mode)
DVCAM-formatted	Some DV video equipment may be able to play back a DVCAM-formatted tape.	Can be played back

Compatibility of DVCAM and DV format

Compatibility on editing using DV connection

When this digital video cassette recorder is connected to other DVCAM or DV video equipment using DV connectors, the recording format of edited tapes is defined according to recorder's format as described below.

Source tape	Player's format	Recorder's format	Recorded format
DV-formatted ¹⁾	DVCAM	DVCAM DV	DVCAM ²⁾ DV
DV-formatted	DV	DVCAM DV	DVCAM ³⁾ DV
DVCAM-formatted ²⁾	DVCAM	DVCAM DV	DVCAM DV ⁴⁾
DVCAM-formatted ²⁾	DV ⁵⁾	DVCAM DV	DVCAM ⁶⁾ DV ⁶⁾

- 1) DV-formatted tapes recorded in SP mode only can be used as source tapes.
- 2) When you copy a DV-formatted tape using DVCAM video equipment, the recorded format of the copied tape is the following DVCAM format.
 - Audio recording mode of the copied tape is unlock mode.
 - Time code of the copied tape is partly inaccurate.
- 3) If you use the DVCAM-formatted tape as described in 2) above, audio recording mode of the recorded tape is unlock mode and time code is partly inaccurate.
- 4) Audio recording mode of the edited tape is lock mode.
- 5) Some DV video equipment may be able to play back a DVCAM-formatted tape. Even if the tape is played back, contents of the playback cannot be guaranteed.
- 6) Depending on signal conditions of the source tape, you may not be able to edit the tape using DV connection.

Limitations on editing

You will find the following limitations when editing.

- Due to the difference of a track pitch, you cannot record or edit on DV-formatted tapes using DVCAM video equipment.
- Depending on signal conditions, you may not be able to record or edit on DVCAM-formatted tapes. In these cases, copy the tape again using audio/video jacks.

Glossary

Audio recording mode

In the DVCAM format, the sound is recorded in either 16bit (Fs48k) or 12bit (Fs32k) mode.

Component signal

A video signal consisting of a luminance signal (Y) and two chrominance signals (R-Y, B-Y).

Composite signal

A composite video signal containing video, burst and sync signals.

Condensation

Condensation of moisture on the tape transport mechanisms of VCRs including the head drum. If moisture condenses on the head drum, the tape adheres to the drum and causes malfunction.

Drop frame mode

In NTSC format, the actual number of frames per second is approximately 29.97, while that for SMPTE time code is specified as 30. Drop frame mode is a mode in which time code is advanced in such a way that the difference in frame value between real time and time code is corrected. In this mode, two frames are skipped at the beginning of each minute, except for every tenth minute, so that the frame value for time code matches that for real time. See also "Non-drop frame mode".

EE mode

EE is an abbreviation of "Electric to Electric". Video and audio signals are supplied to the VCR's internal circuits, but not to the recording heads.

Loading

When being loaded, the tape is pulled out of the cassette case and threaded along the specified tape path and wrapped round the drum to be ready for recording or playback. Generally, this is done automatically when you place the cassette at the cassette entrance of the VCR. Also called threading.

Non-drop frame mode

A mode of advancing time code in such a way that the difference in frame value between real time and time code is neglected. Using this mode produces a difference of approximately 86 seconds per day between real time and time code, which may cause problems when editing programs in units of seconds using the number of frames as a reference.

Reference video signal

A video signal consisting of a sync signal or sync and burst signals, used as a reference.

Superimpose

To put a set of characters onto a picture so that both can be seen at the same time.

Sync signal

A reference signal consisting of vertical and horizontal sync signals used for synchronizing the scanning patterns of the video camera and the monitor.

Threading

See "Loading".

Time code

Signals recorded on the tape to supply information on tape position such as the hour, minute, second and frame, to assist in setting edit points or searching for particular scenes. This VCR can cope with both DF (Drop Frame) and NDF (Non Drop Frame).

On this VCR, the time code is recorded sequentially from "00:00:00:00" from the beginning of the tape. However, if there is a blank section on the tape, time code is reset and recorded from "00:00:00:00" again from the section just after the blank section. If the time codes are out of sequence, you may not be able to execute correct editing.

Unloading

When being unloaded, the tape is put into the cassette case from the tape path of the VCR. Generally, this is done automatically when you press the EJECT button. Also called unthreading.

Unthreading

See "Unloading".

12bit (Fs32k) mode

In the DVCAM format, the 12bit (Fs32k) mode separates the audio area into 2 parts. You can record two kinds of audio, stereo 1 and stereo 2.

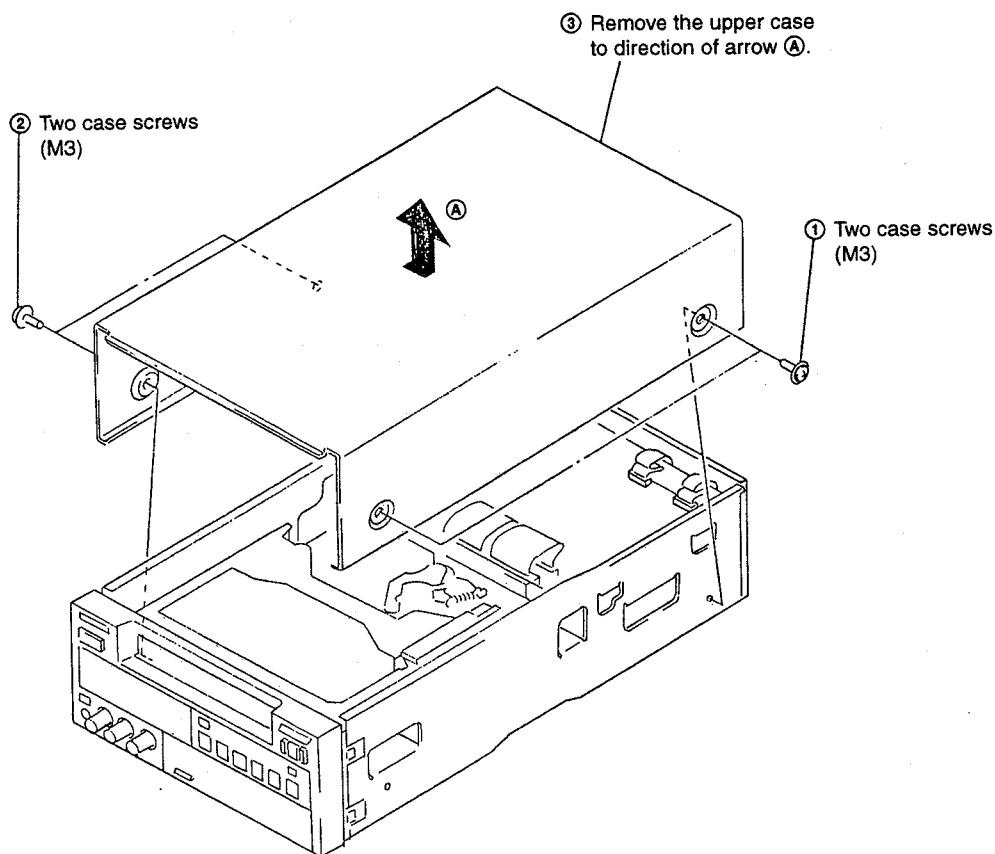
16bit (Fs48k) mode

In the DVCAM format, the 16bit (Fs48k) mode uses the whole audio area to record one stereo track. You can get higher sound quality.

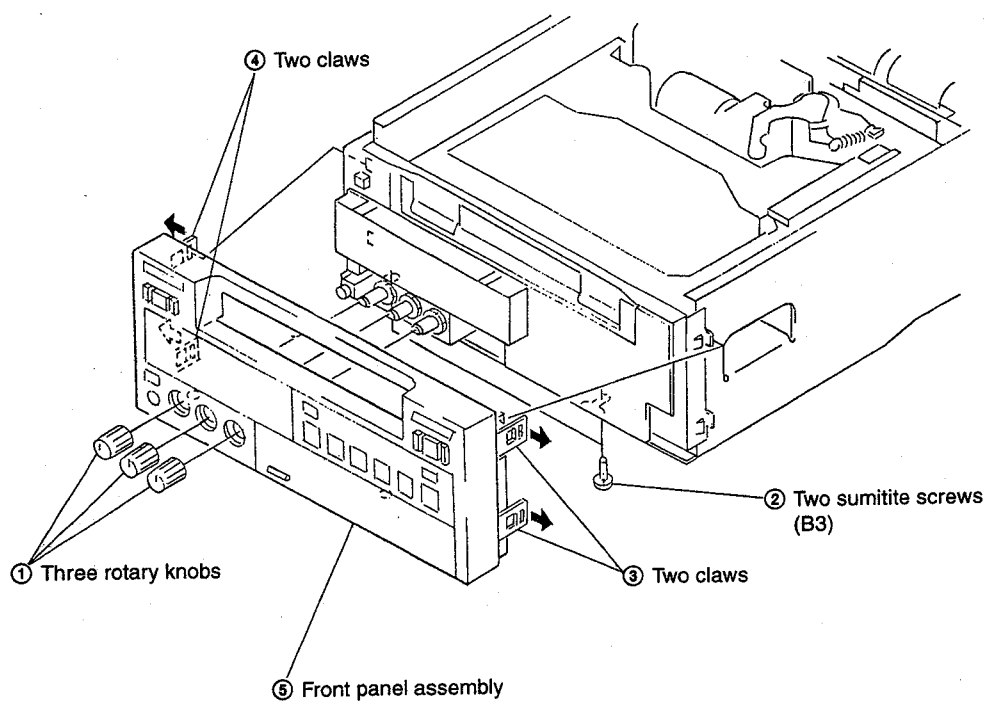
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SECTION 2 DISASSEMBLY

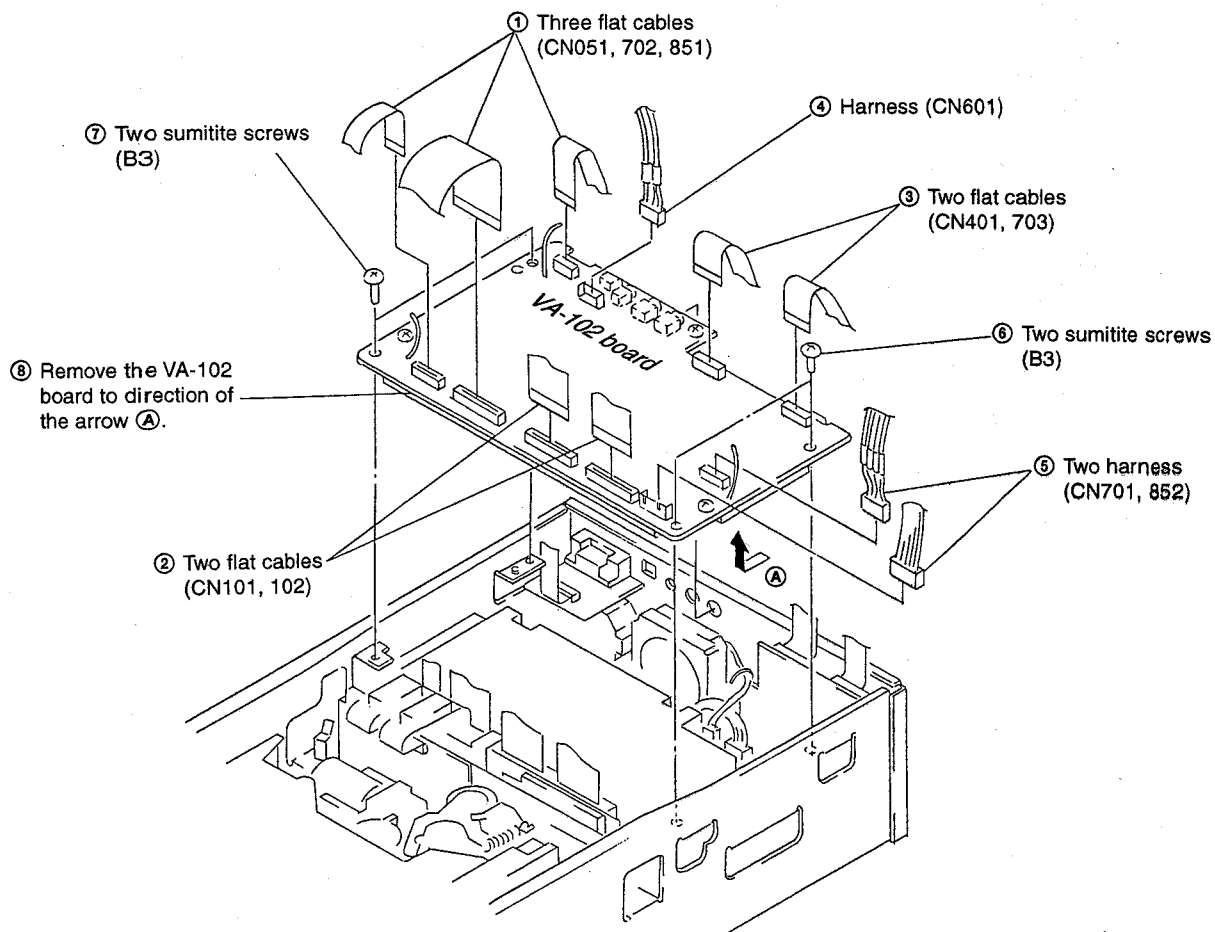
2-1. REMOVAL OF UPPER CASE



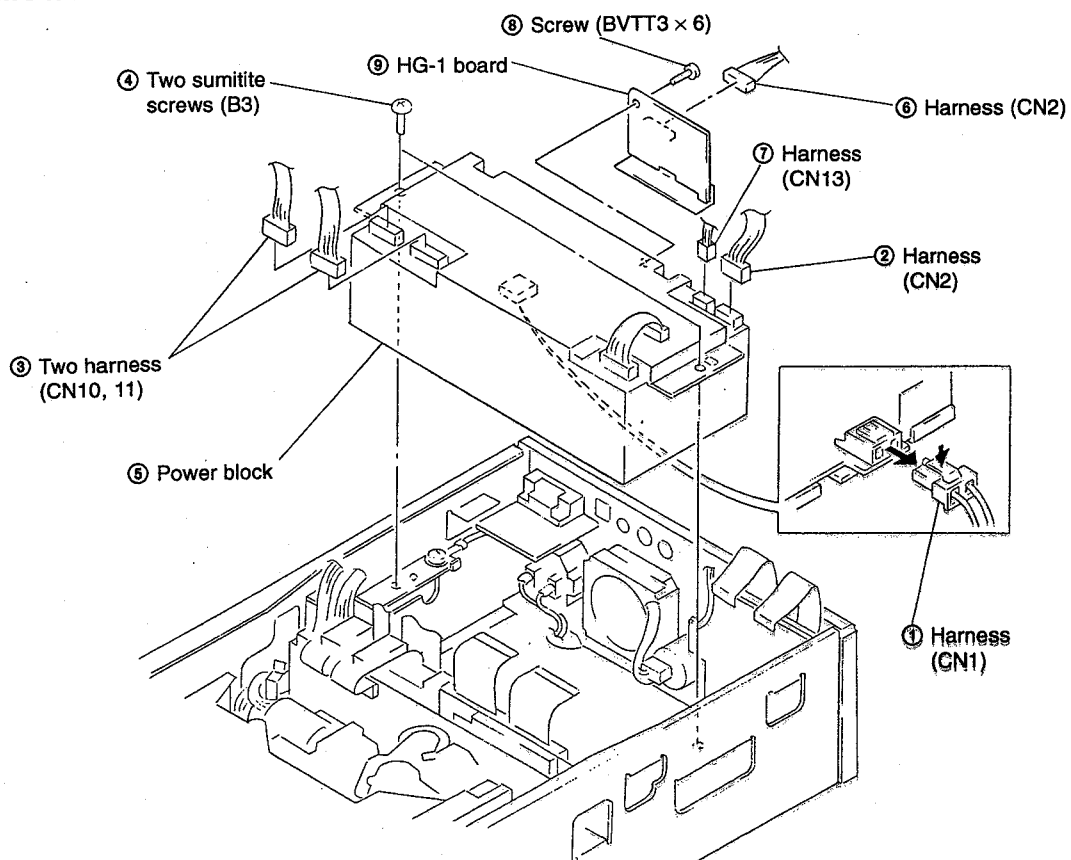
2-2. REMOVAL OF FRONT PANEL ASSEMBLY



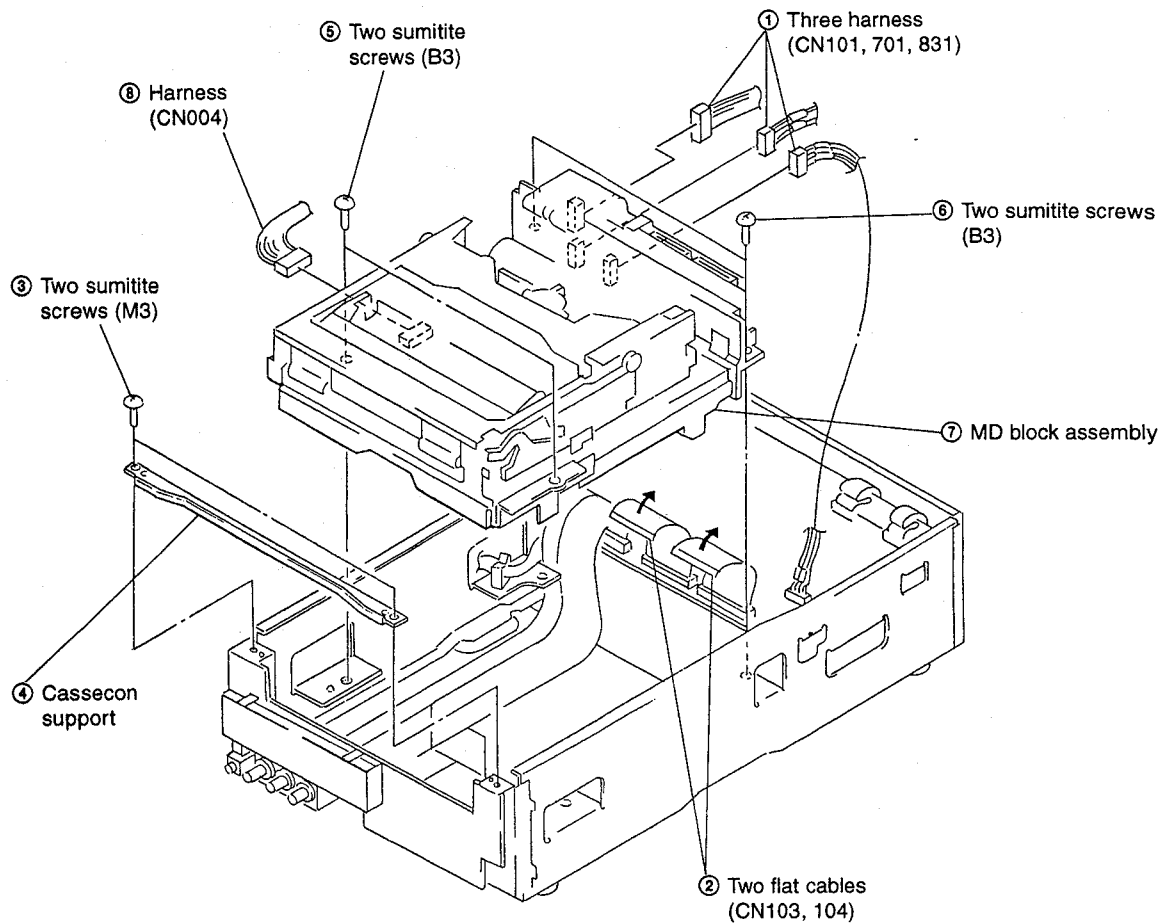
2-3. REMOVAL OF VA-102 BOARD



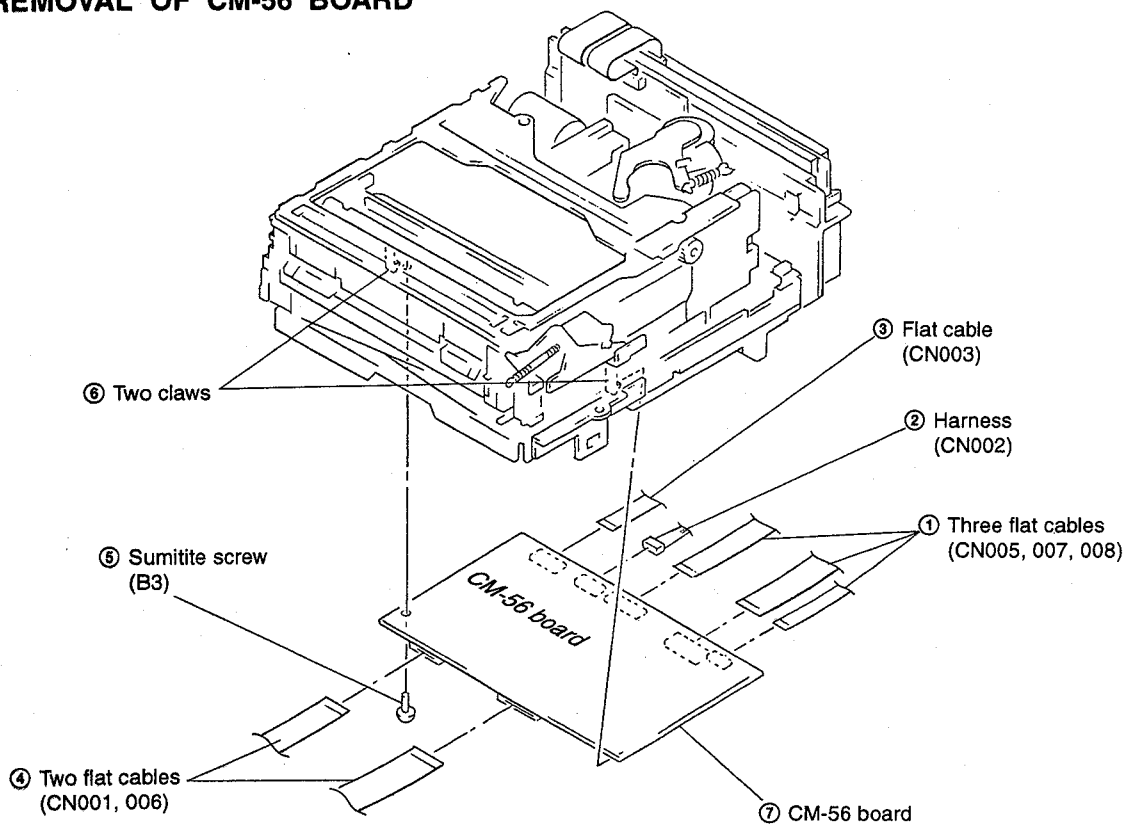
2-4. REMOVAL OF POWER BLOCK AND HG-1 BOARD



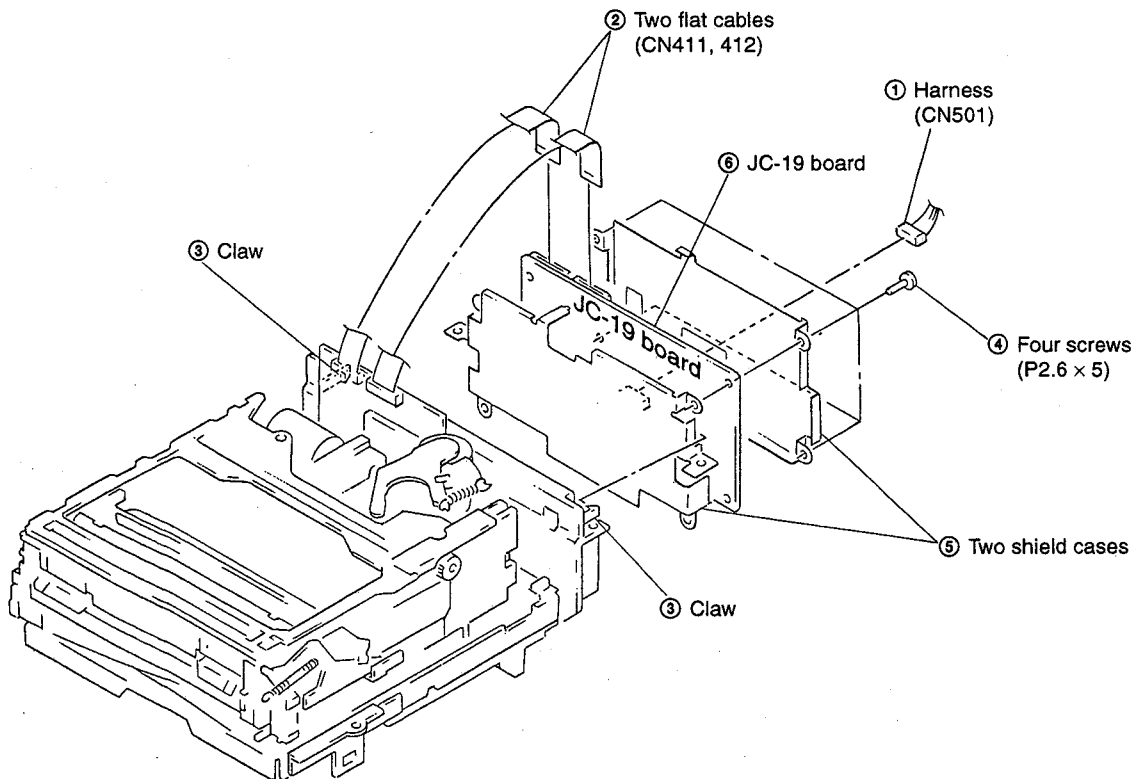
2-5. REMOVAL OF MD BLOCK ASSEMBLY



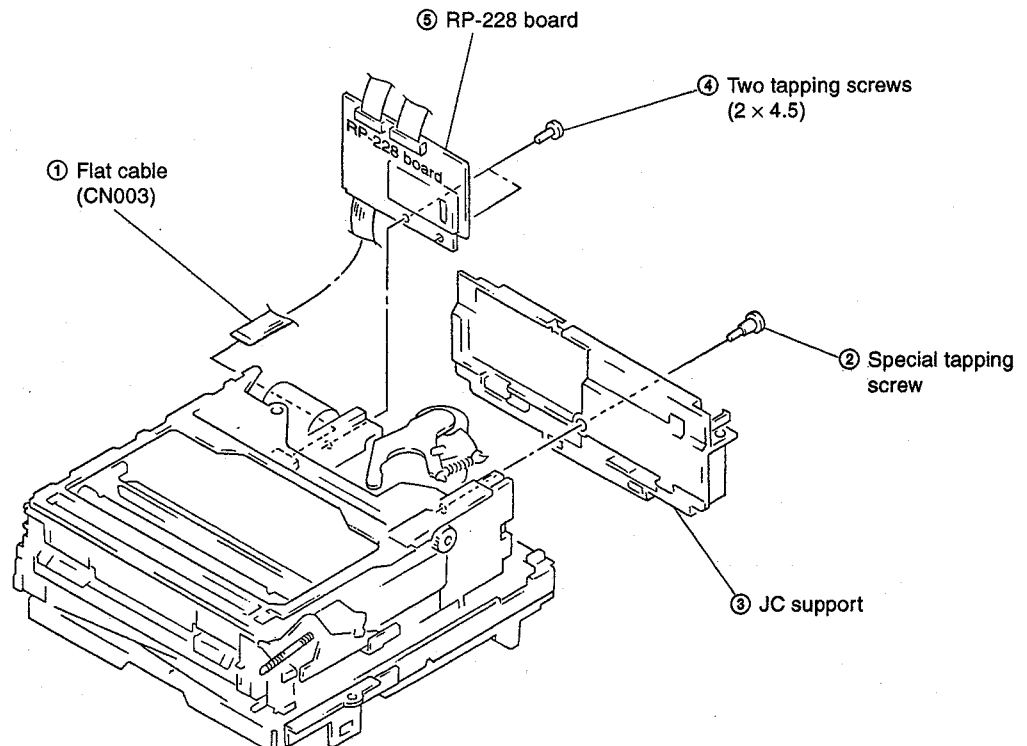
2-6. REMOVAL OF CM-56 BOARD



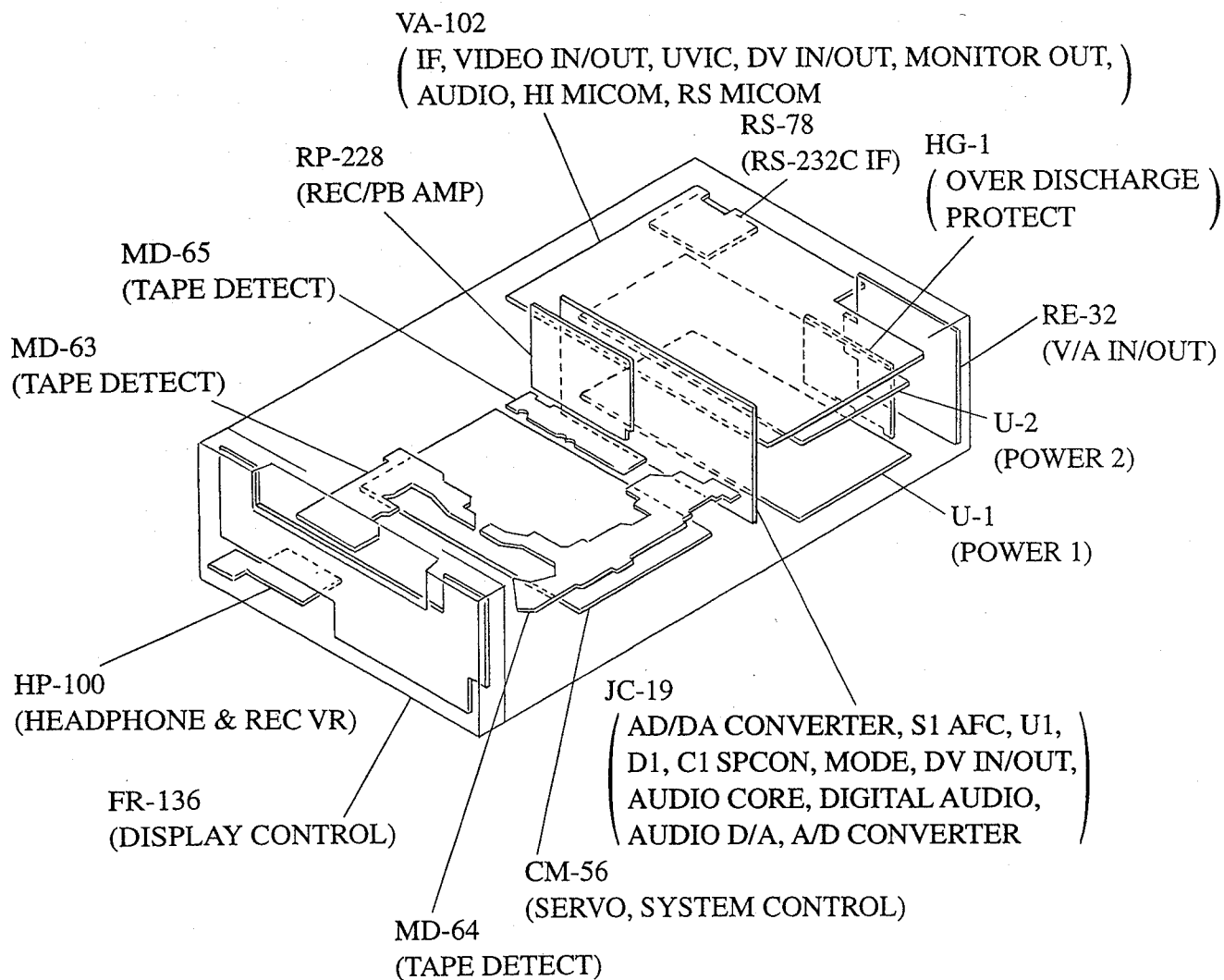
2-7. REMOVAL OF JC-19 BOARD



2-8. REMOVAL OF RP-228 BOARD

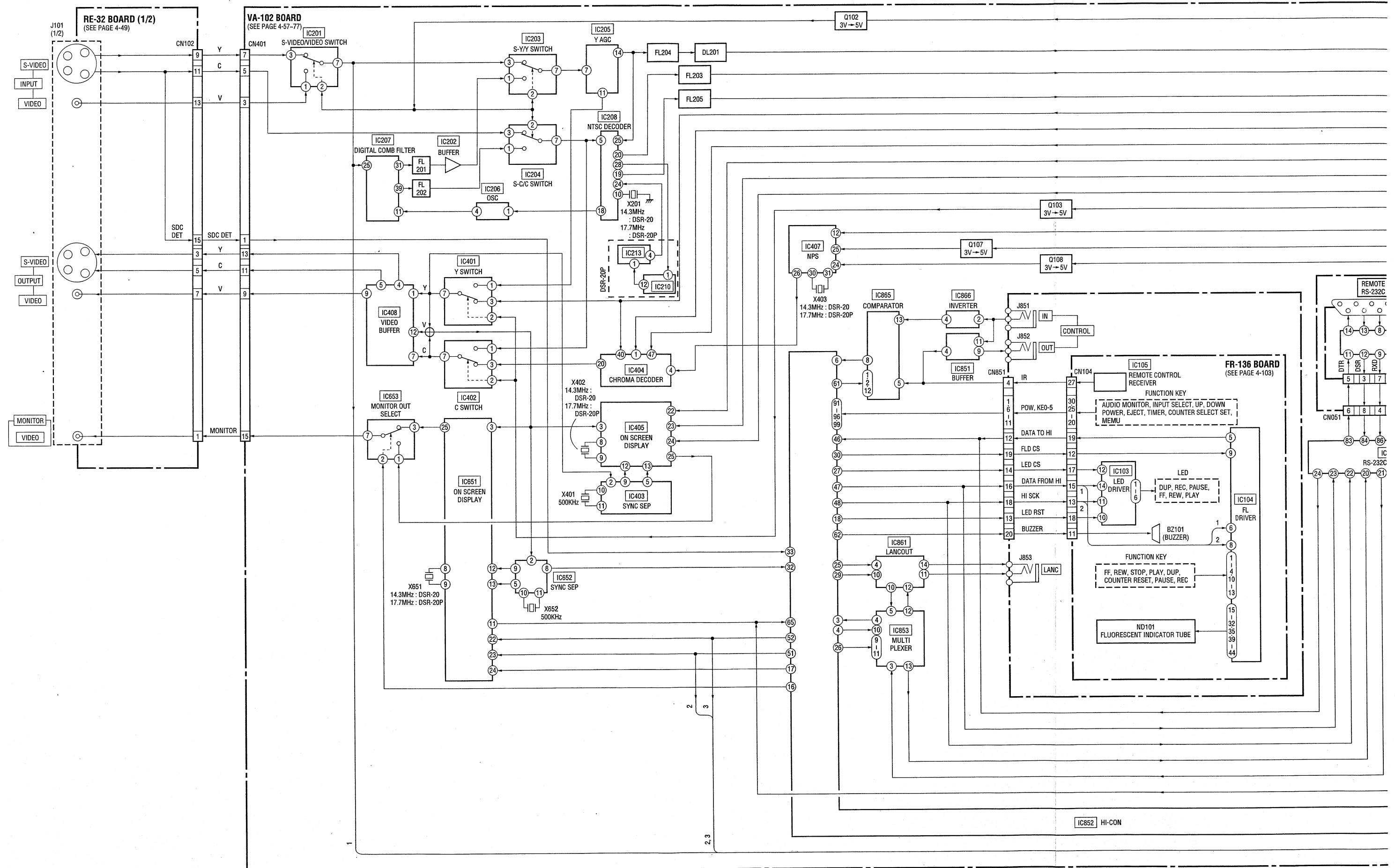


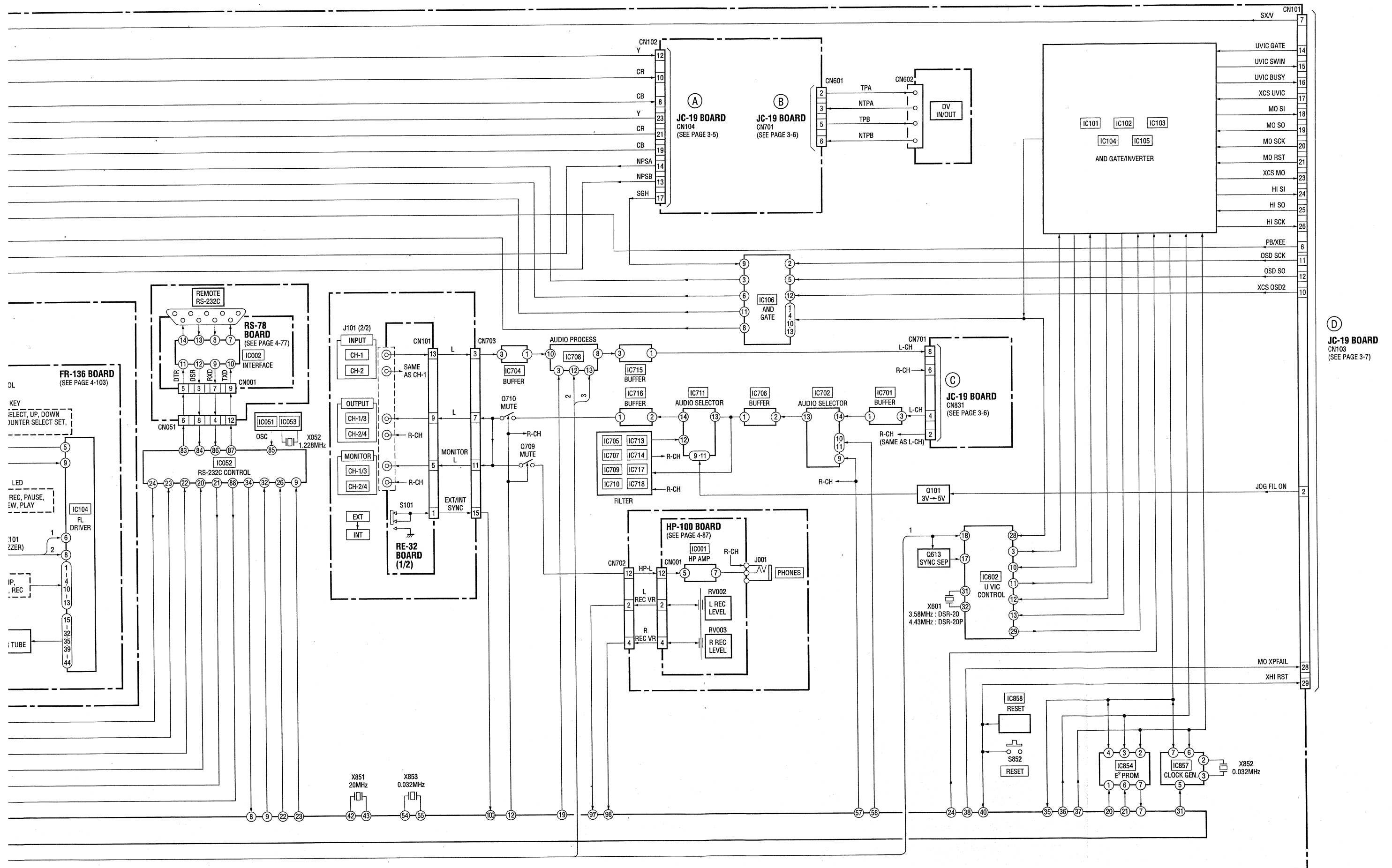
2-9. CIRCUIT BOARDS LOCATION



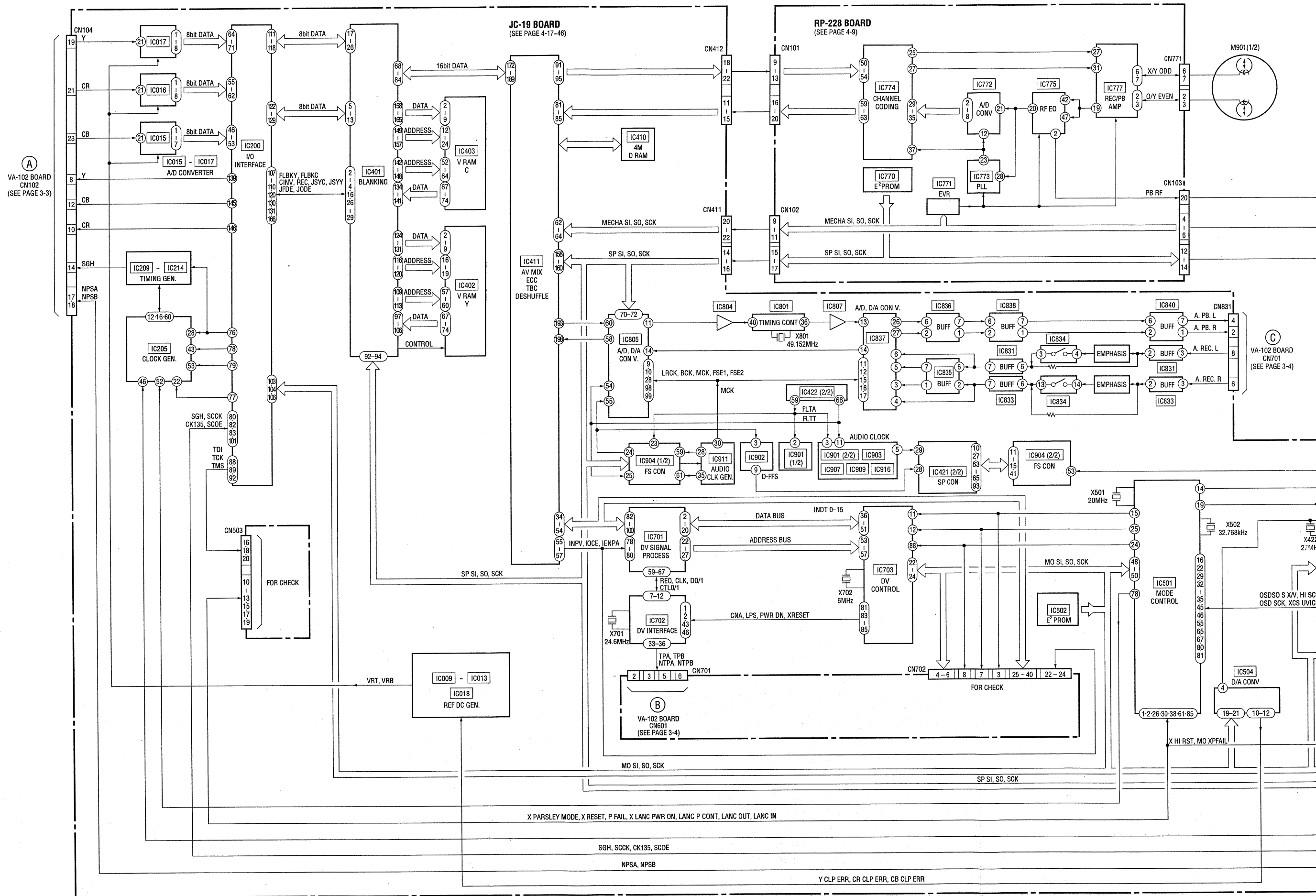
SECTION 3 BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM 2



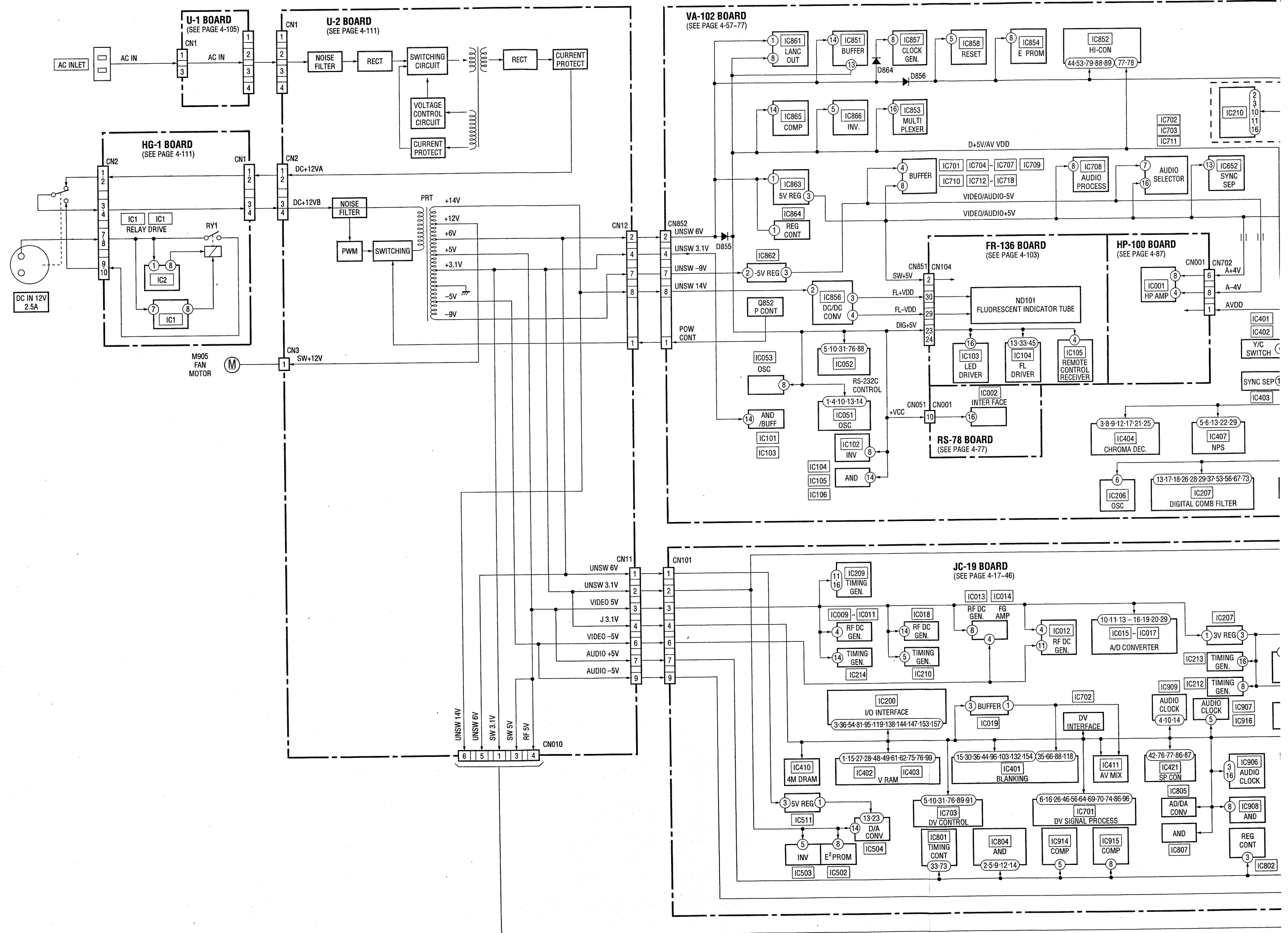


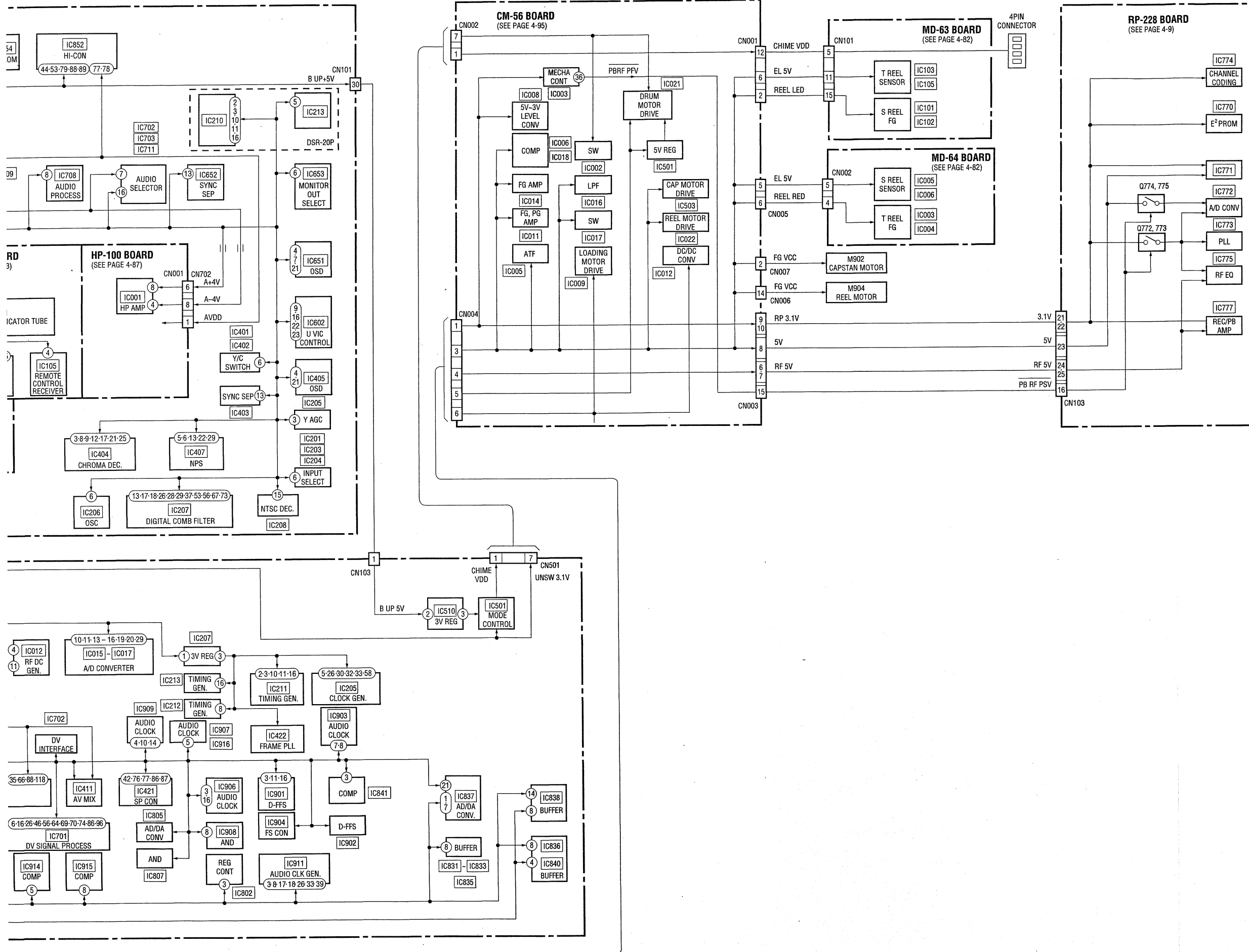
OVERALL BLOCK DIAGRAM 2





3-3. OVERALL BLOCK DIAGRAM 3

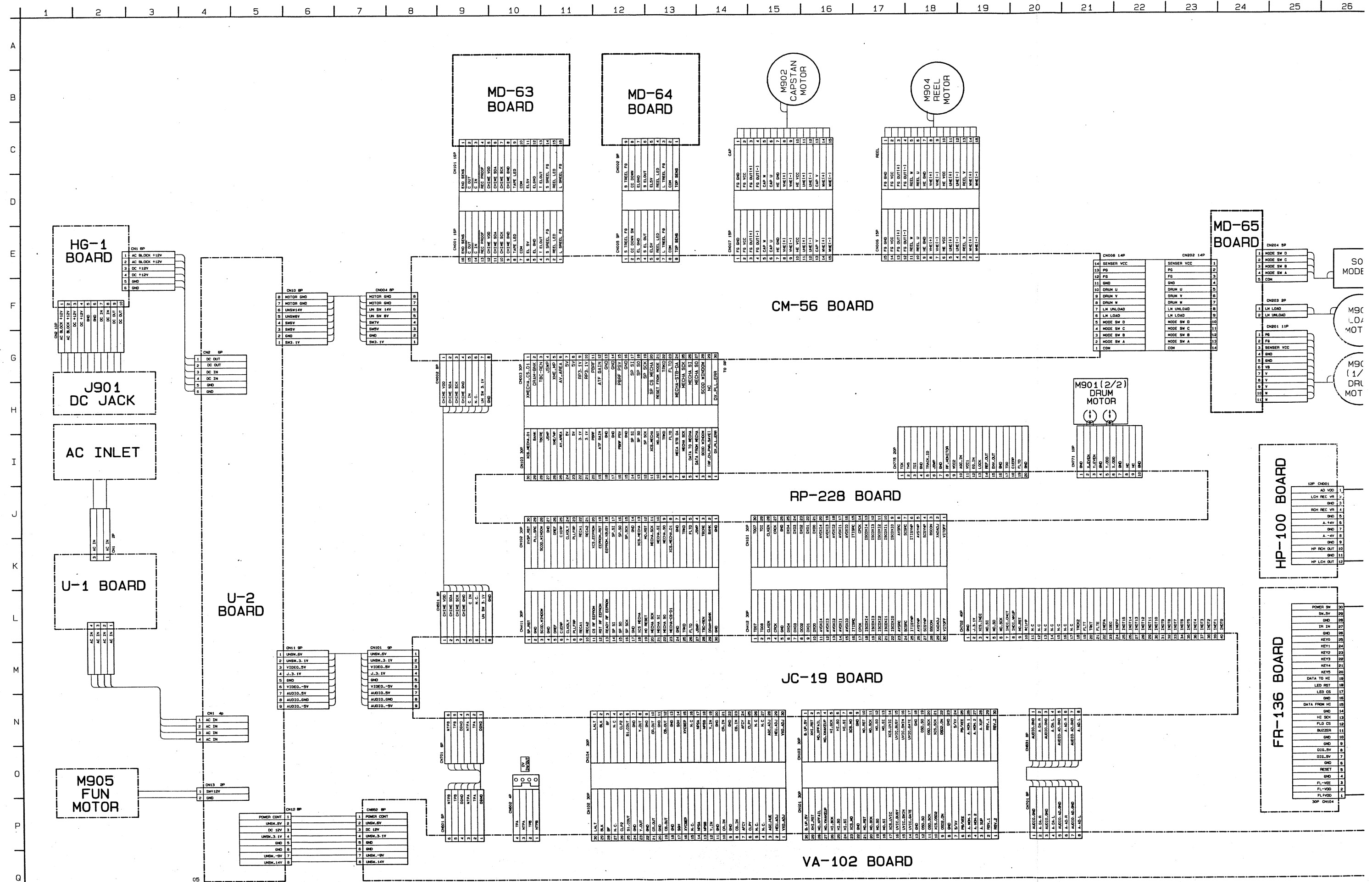


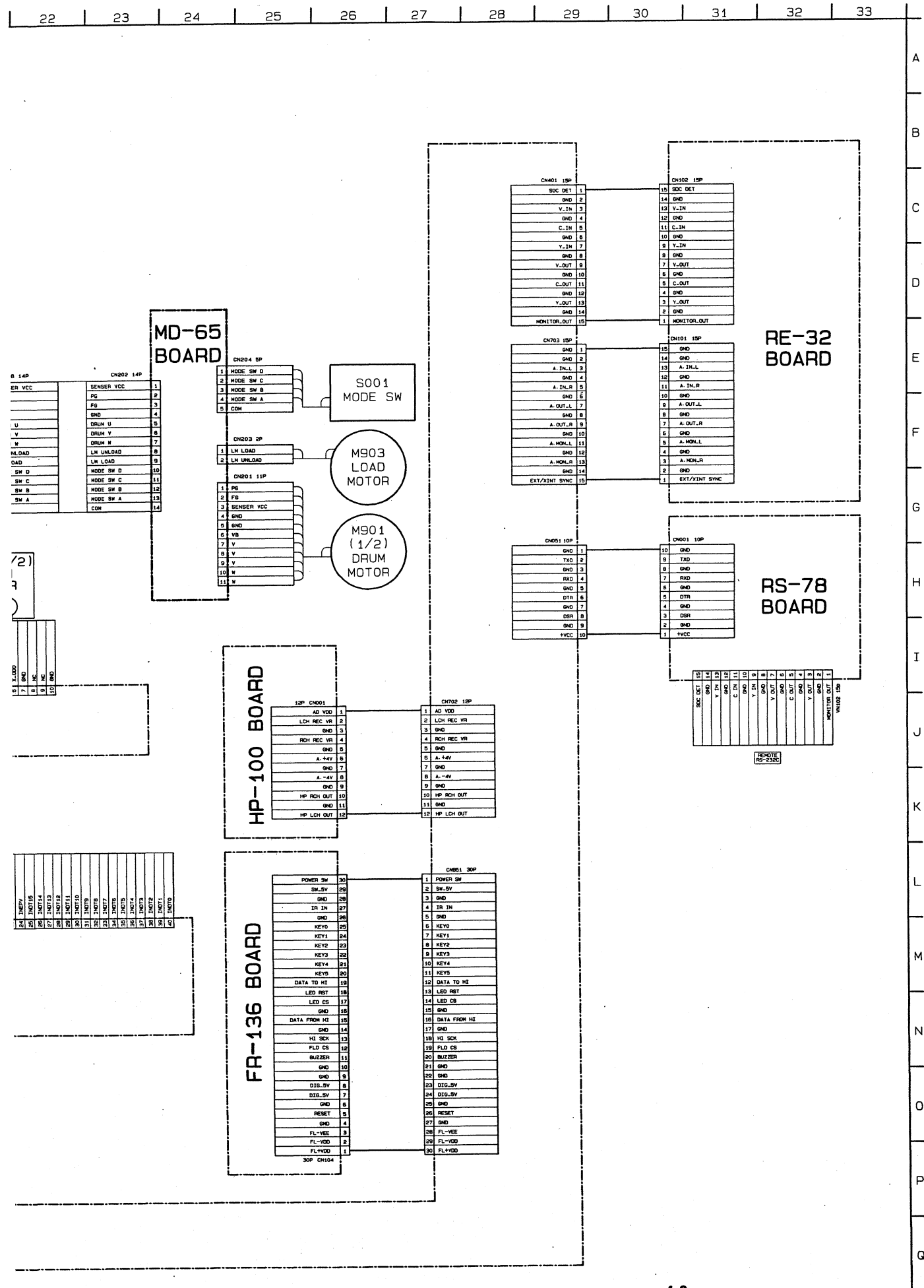


SECTION 4

PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



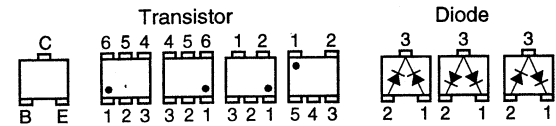


PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary mote is printed in each block.)

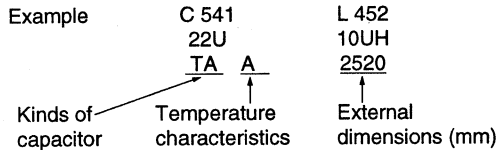
For printed wiring boards:

- Pattern from the side which enables seeing.
(The other layers' pattern are not indicated)
- Circled numbers refer to waveforms.
- Through hole is omitted
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



For schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : μF 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are $1/10\text{W}$ unless otherwise noted. $\text{k}\Omega$: 1000Ω , $\text{M}\Omega$: $1000\text{k}\Omega$.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- Some chip part will be indicated as follows.



- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used. In such cases, the unused circuits may be indicated.
- Parts with differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
XEDIT \rightarrow EDIT PB/XREC \rightarrow PB/REC
- nonflammable resistor.
- fusible resistor.
- panel designation.
- B+ Line.*
- B- Line.*
- IN/OUT direction of B line (+, -).*
- adjustment for repair.*
- Circled numbers refer to waveforms.*
- Indicated by the color red.

RP-228 BOARD (SIDE A)

CN101	A-2
CN102	A-4
CN771	B-6
CN775	A-5

D772	A-1
D774	B-5
D775	C-5

IC770	C-1
IC771	D-3
IC772	B-1
IC775	B-3
IC777	C-5

Q105	C-2
Q109	B-3
Q774	A-1
Q775	A-1
Q776	B-2
Q777	B-2
Q779	A-3
Q784	B-3

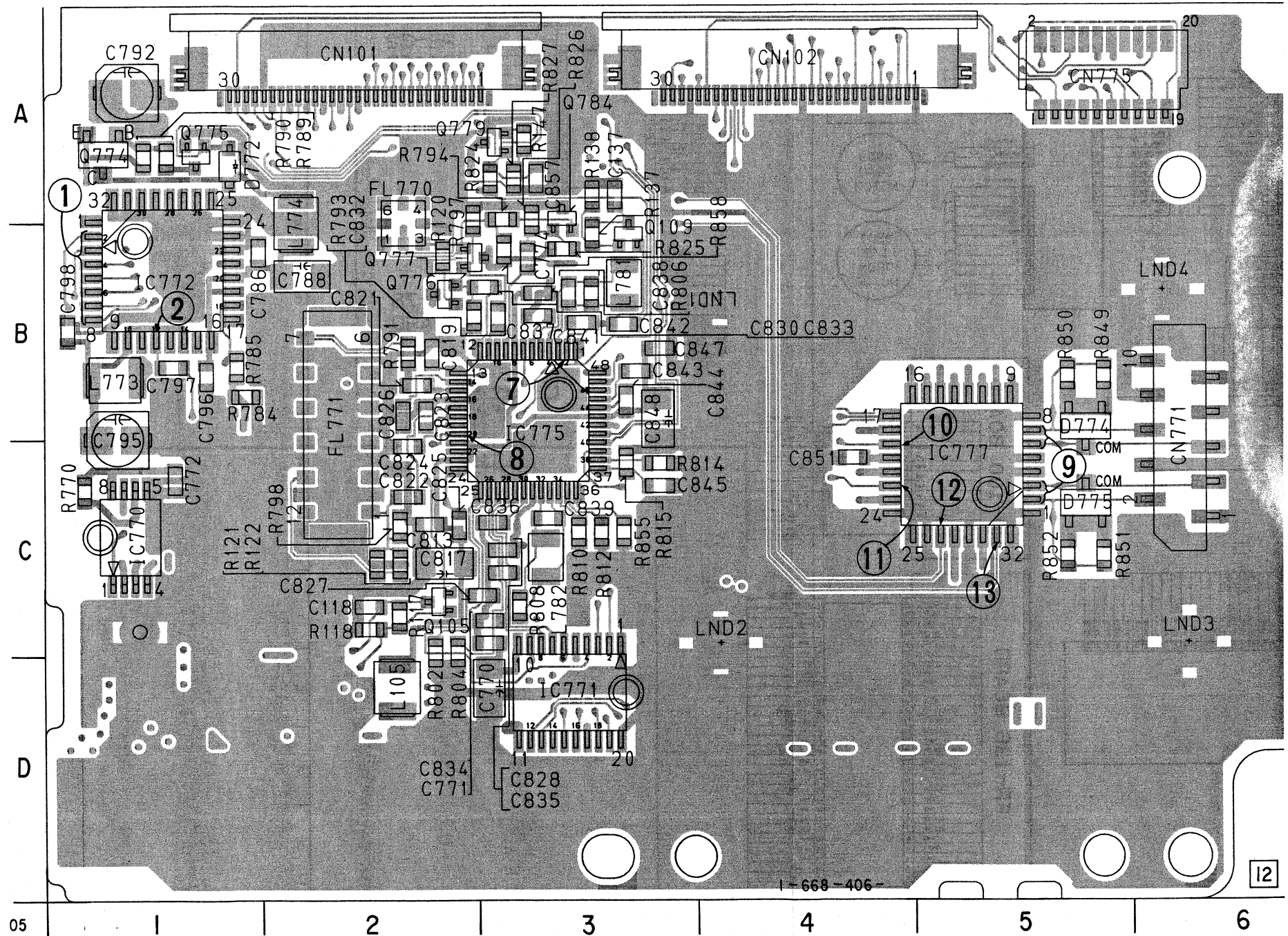
RP-228 (REC/PB AMP) PRINTED WIRING BOARD

— Ref. No. : RP-228 board; 3,000 series —

- For Printed Wiring Board.
- This board is six-layer print board. layers 2 to 5 have not been include
- There are few cases that the part is printed on this diagram.
- Chip transistor



RP-228 BOARD (SIDE A)



RP-228 (REC/PB AMP) SCHEMATIC DIAGRAM

— Ref. No. : RP-228 board; 3,000 series —

RP-228 BOARD

no mark: REC/PB mode
R: REC mode
P: PB mode
XX mark: NO MOUNT

(SEE PAGE 4-95)

CN103 30P	30	CL783	R-30
XCS-MECH-D1	28	CL783	R-31
BANK	26	CL783	R-32
TRIG	27	CL783	R-6
AMP	25	CL783	R-20
RF 5V	24	CL783	R-20
5V	23	CL783	R-20
3.1V	22	CL783	R-20
3.1V	21	CL783	R-20
POWER	20	CL783	R-20
ATF DATA	19	CL783	R-20
16	18	CL783	R-20
17	17	CL783	R-20
15	16	CL783	R-20
14	15	CL783	R-20
13	14	CL783	R-20
12	13	CL783	R-20
11	12	CL783	R-20
10	11	CL783	R-20
9	10	CL783	R-20
8	9	CL783	R-20
7	8	CL783	R-20
6	7	CL783	R-20
5	6	CL783	R-20
4	5	CL783	R-20
3	4	CL783	R-20
2	3	CL783	R-20
1	2	CL783	R-20

CN102 30P	1	CL102	O12
1	CL102	O12	
2	CL102	O12	
3	CL102	O12	
4	CL102	O12	
5	CL102	O12	
6	CL102	O12	
7	CL102	O12	
8	CL102	O12	
9	CL102	O12	
10	CL102	O12	
11	CL102	O12	
12	CL102	O12	
13	CL102	O12	
14	CL102	O12	
15	CL102	O12	
16	CL102	O12	
17	CL102	O12	
18	CL102	O12	
19	CL102	O12	
20	CL102	O12	
21	CL102	O12	
22	CL102	O12	
23	CL102	O12	
24	CL102	O12	
25	CL102	O12	
26	CL102	O12	
27	CL102	O12	
28	CL102	O12	
29	CL102	O12	
30	CL102	O12	

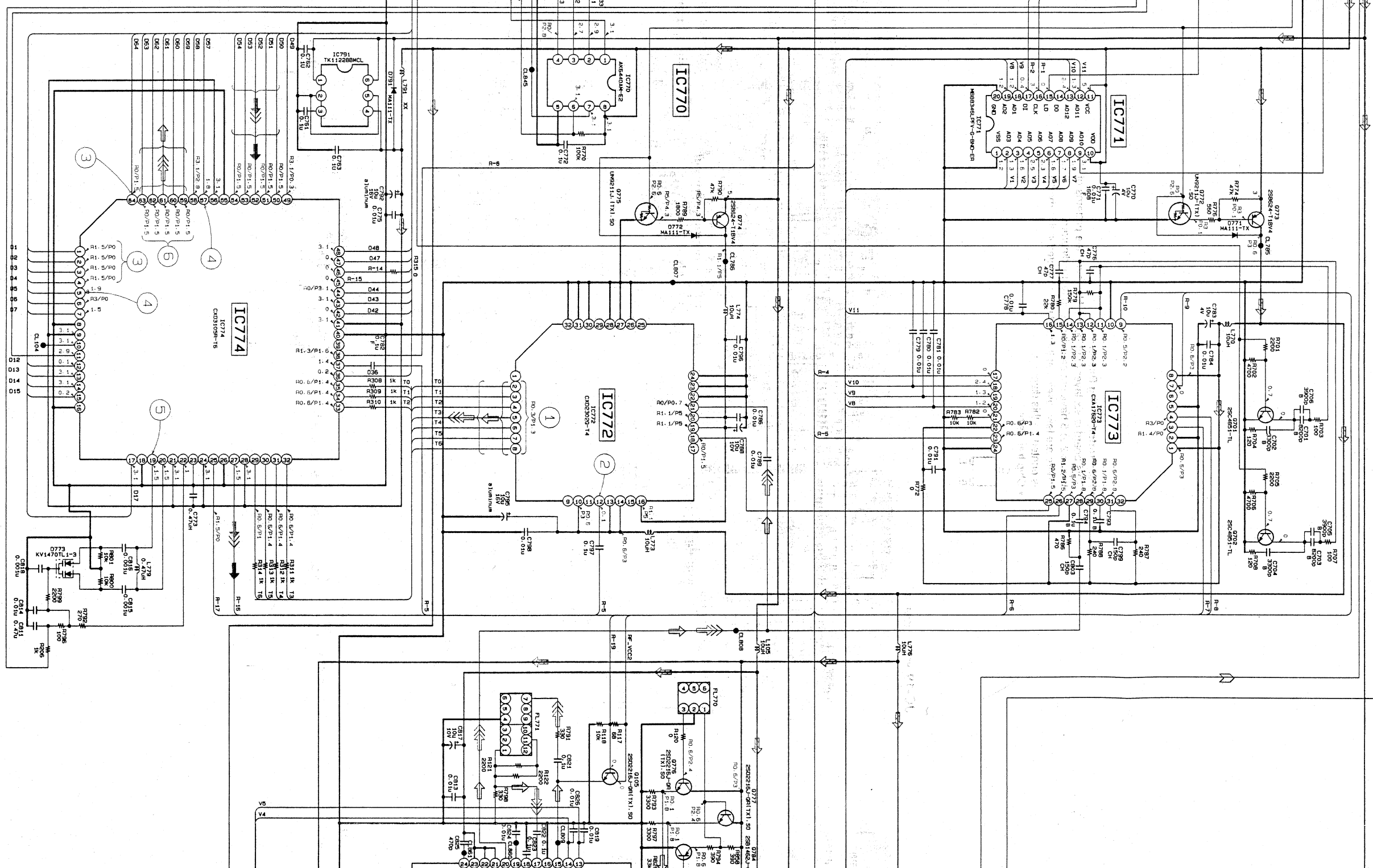
CN101 30P	1	CL101	O12
1	CL101	O12	
2	CL101	O12	
3	CL101	O12	
4	CL101	O12	
5	CL101	O12	
6	CL101	O12	
7	CL101	O12	
8	CL101	O12	
9	CL101	O12	
10	CL101	O12	
11	CL101	O12	
12	CL101	O12	
13	CL101	O12	
14	CL101	O12	
15	CL101	O12	
16	CL101	O12	
17	CL101	O12	
18	CL101	O12	
19	CL101	O12	
20	CL101	O12	
21	CL101	O12	
22	CL101	O12	
23	CL101	O12	
24	CL101	O12	
25	CL101	O12	
26	CL101	O12	
27	CL101	O12	
28	CL101	O12	
29	CL101	O12	
30	CL101	O12	

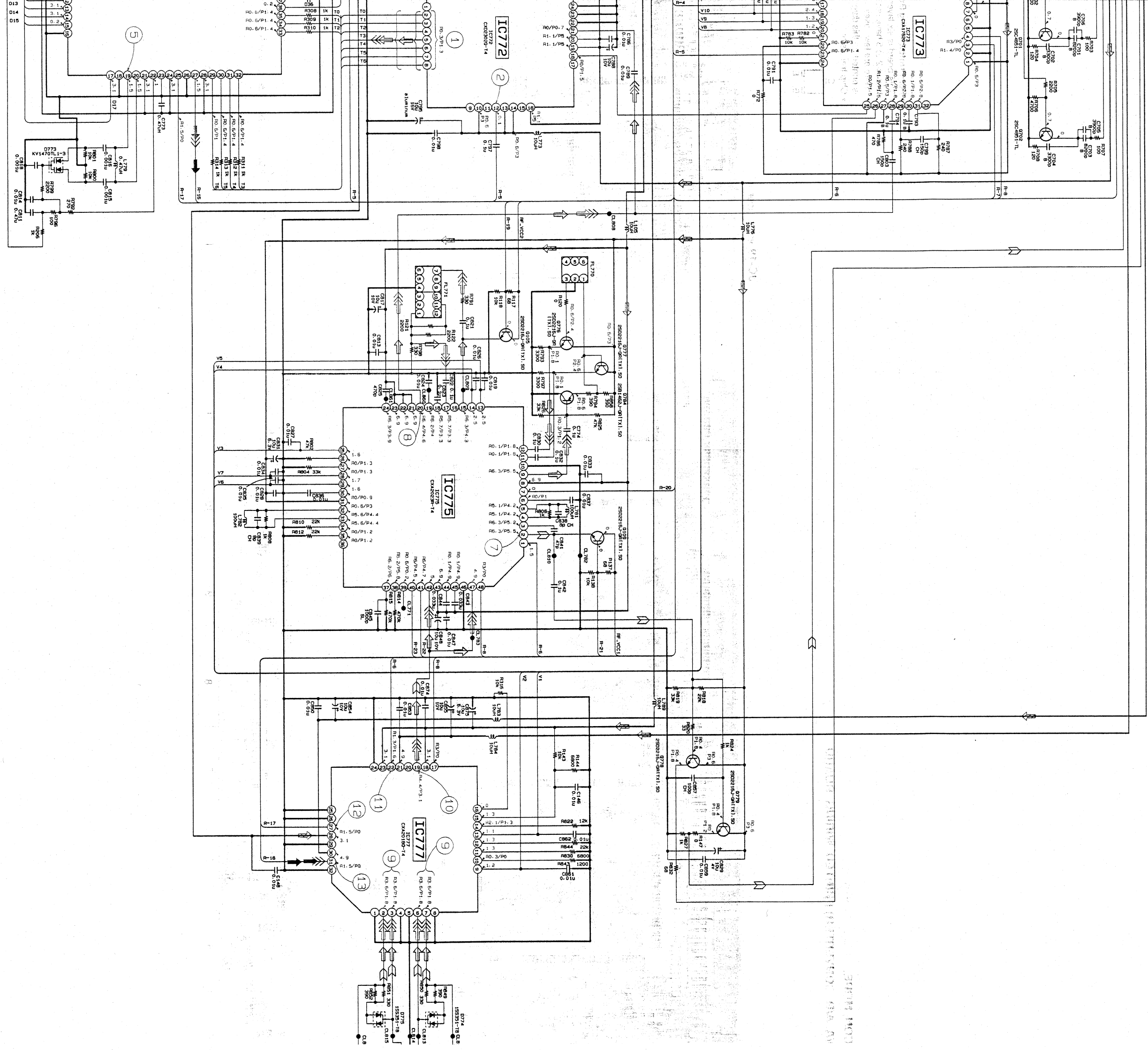
(SEE PAGE 4-30)

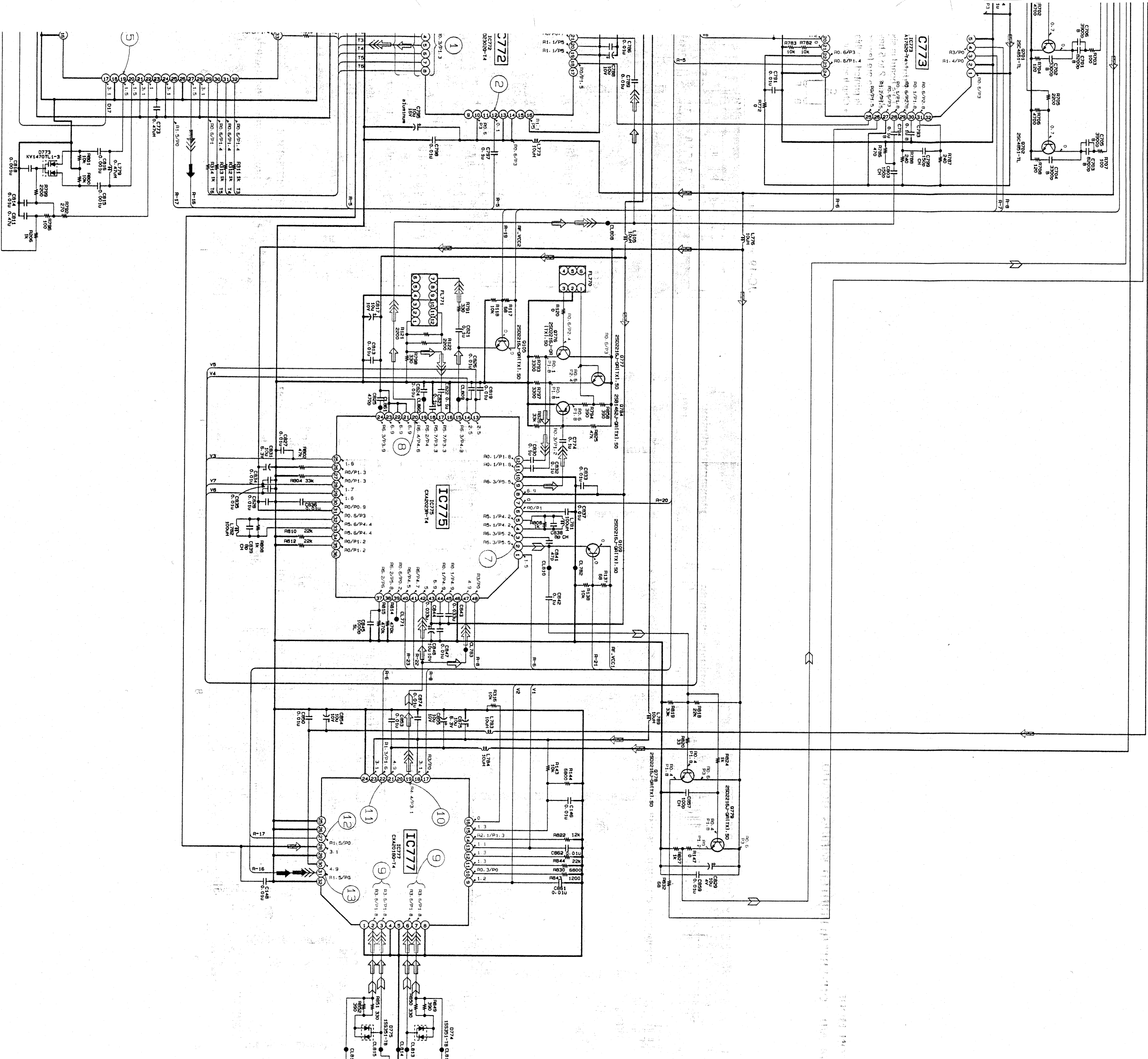
CN100 30P	1	CL100	O12
1	CL100	O12	
2	CL100	O12	
3	CL100	O12	
4	CL100	O12	
5	CL100	O12	
6	CL100	O12	
7	CL100	O12	
8	CL100	O12	
9	CL100	O12	
10	CL100	O12	
11	CL100	O12	
12	CL100	O12	
13	CL100	O12	
14	CL100	O12	
15	CL100	O12	
16	CL100	O12	
17	CL100	O12	
18	CL100	O12	
19	CL100	O12	
20	CL100	O12	
21	CL100	O12	
22	CL100	O12	
23	CL100	O12	
24	CL100	O12	
25	CL100	O12	
26	CL100	O12	
27	CL100	O12	
28	CL100	O12	
29	CL100	O12	
30	CL100	O12	

(SEE PAGE 4-10)

CN103 30P	1	CL103	O12
1	CL103	O12	
2	CL103	O12	
3	CL103	O12	
4	CL103	O12	
5	CL103	O12	
6	CL103	O12	
7	CL103	O12	
8	CL103	O12	
9	CL103	O12	
10	CL103	O12	
11	CL103	O12	
12	CL103	O12	
13	CL103	O12	
14	CL103	O12	
15	CL103	O12	
16	CL103	O12	
17	CL103	O12	
18	CL103	O12	
19	CL103	O12	
20	CL103	O12	
21	CL103	O12	
22	CL103	O12	
23	CL103	O12	
24	CL103	O12	
25	CL103	O12	
26	CL103	O12	
27	CL103	O12	
28	CL103	O12	
29	CL103	O12	
30	CL103	O12	

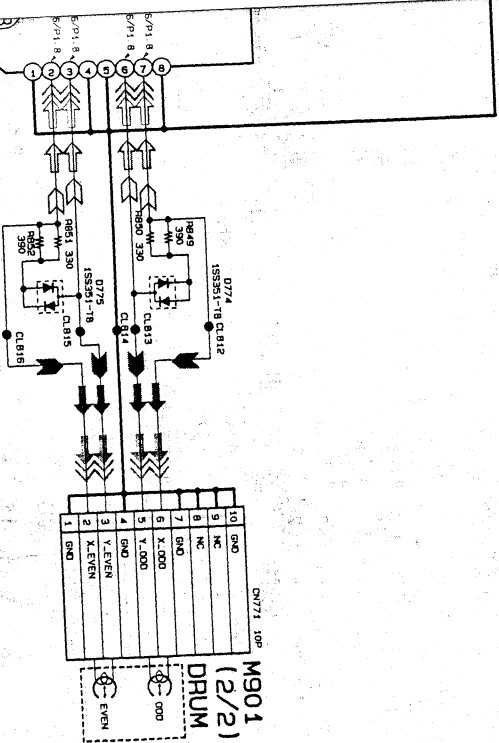




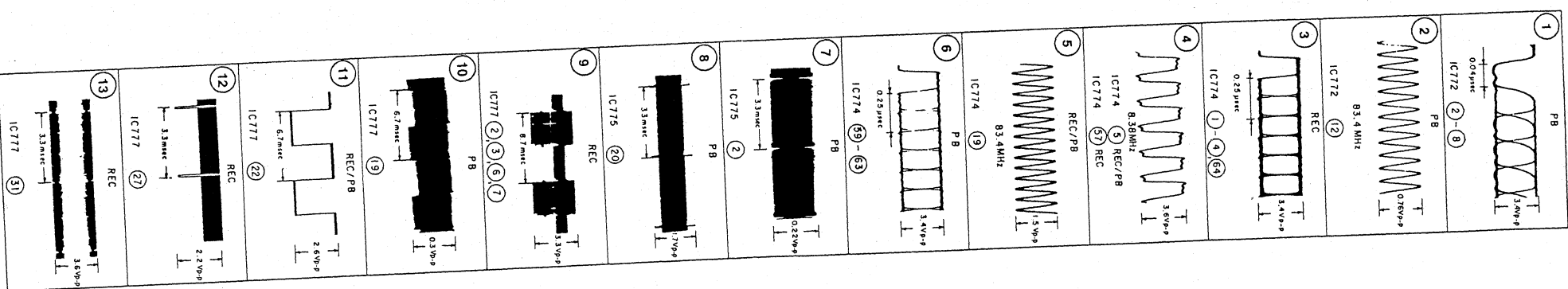


22 23 24 25 26

A B C D E F G H I J K L M N O P Q R



RP-228 BOARD



• Signal path

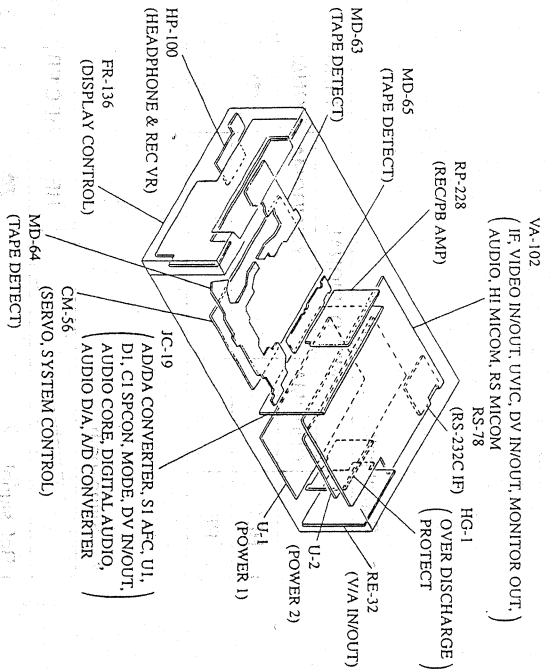
	VIDEO SIGNAL		AUDIO SIGNAL
	CHROMA	Y/CHROMA	
REC		➡➡➡	➡
PB		➡➡➡	➡

• Signal path

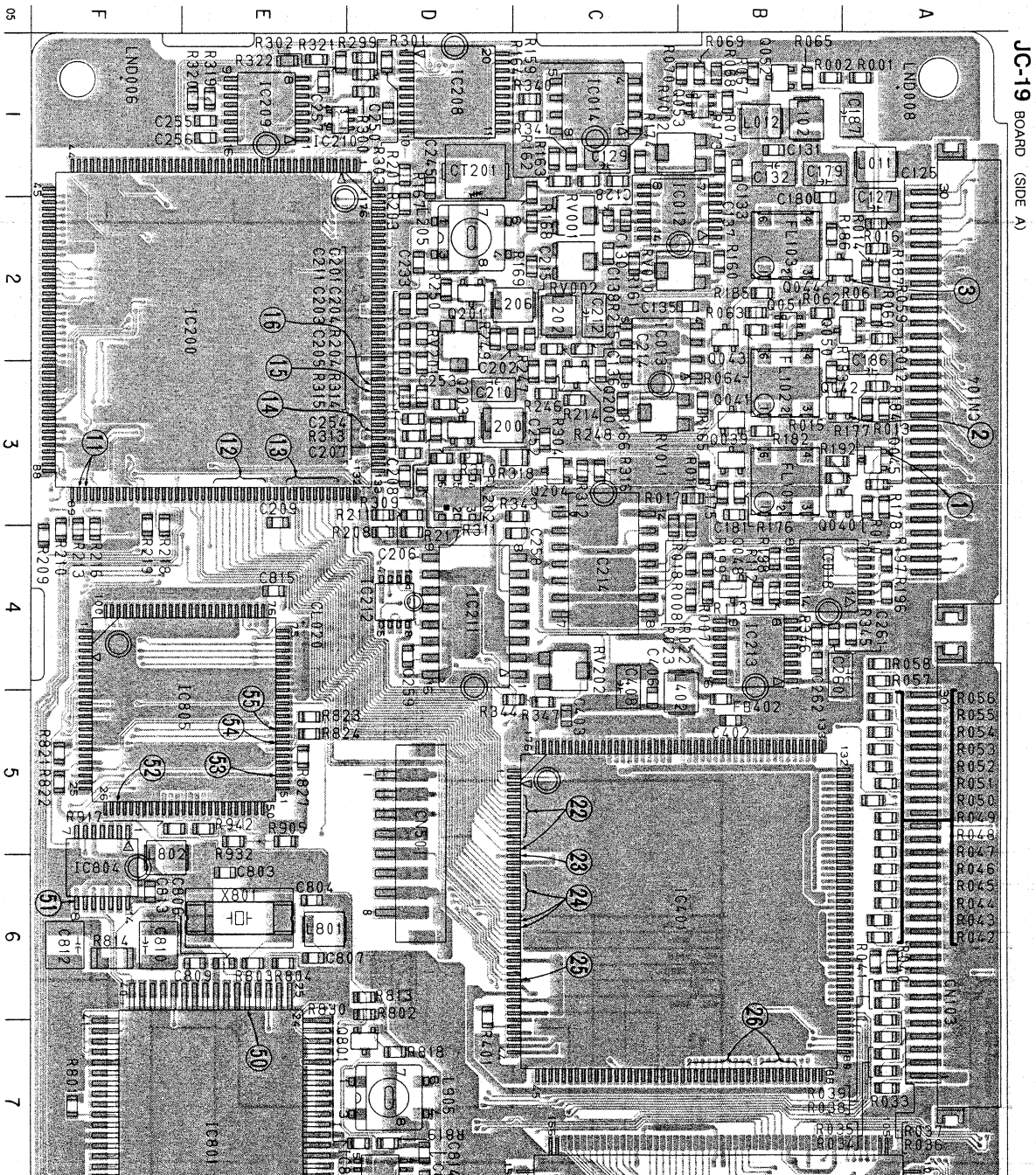
Ref. signal	REC		PB
	➡	➡	➡

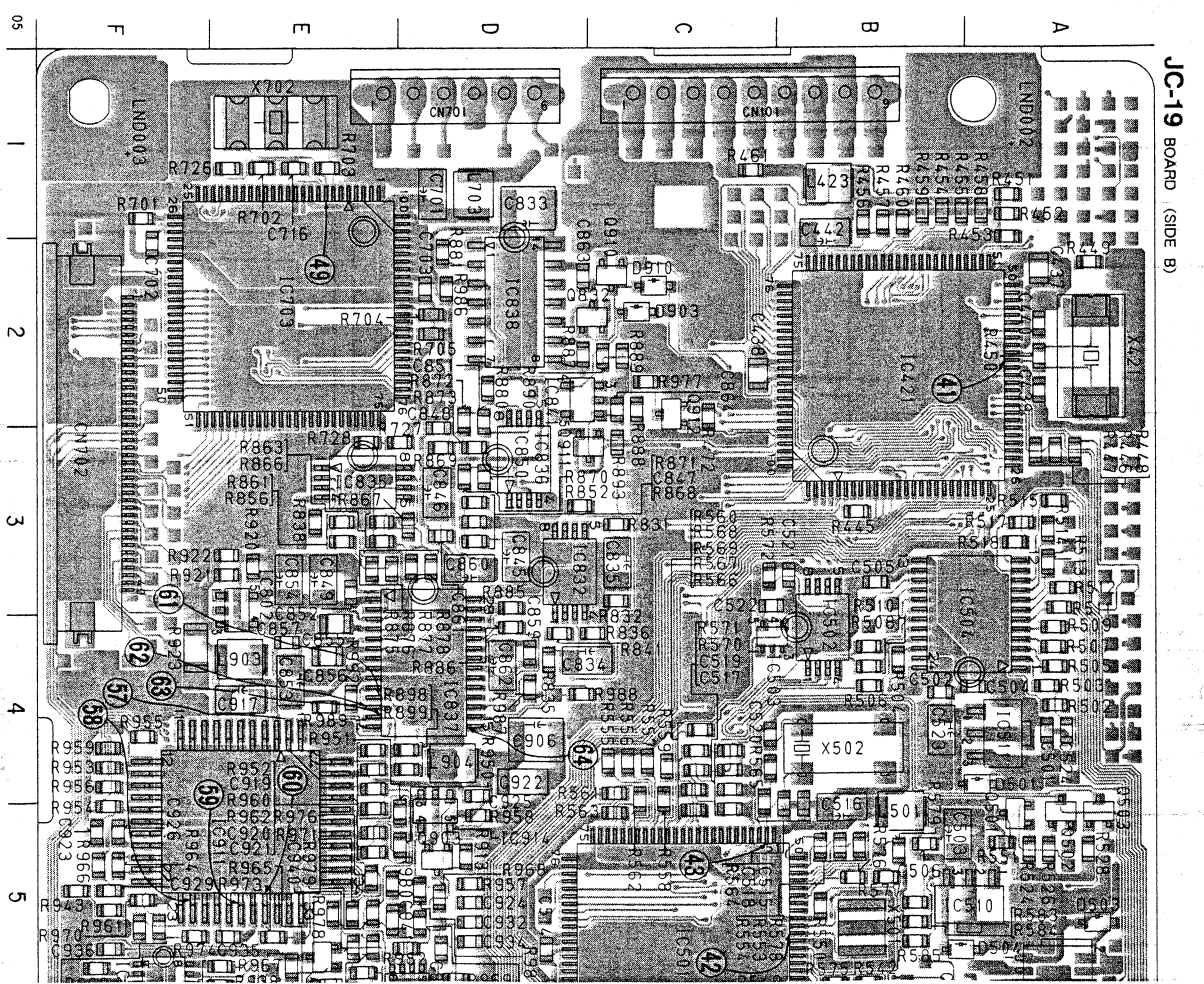
DSR-20/20P

JC-19 BOARD (SIDE A)	
CN103	A-6
CN104	A-3
CN411	A-9
CN412	A-10
CN501	D-5
CN831	D-10
IC012	C-2
IC013	C-2
IC014	C-1
IC018	B-4
IC019	C-11
IC200	E-2
IC209	E-1
IC210	E-1
IC211	D-4
IC212	D-4
IC213	B-4
IC214	C-4
IC401	B-6
IC410	B-10
IC411	B-8
IC701	F-9
IC702	E-10
IC801	E-7
IC804	F-6
IC805	E-4
IC807	D-8
IC831	E-9
IC833	D-9
IC840	D-11
0039	B-3
0040	B-3
0041	B-3
0042	B-3
0043	B-2
0044	B-2
0045	A-3
0048	B-4
0050	A-2
0051	B-2
0052	B-1
0053	B-1
0200	C-3
0201	D-2
0801	D-7

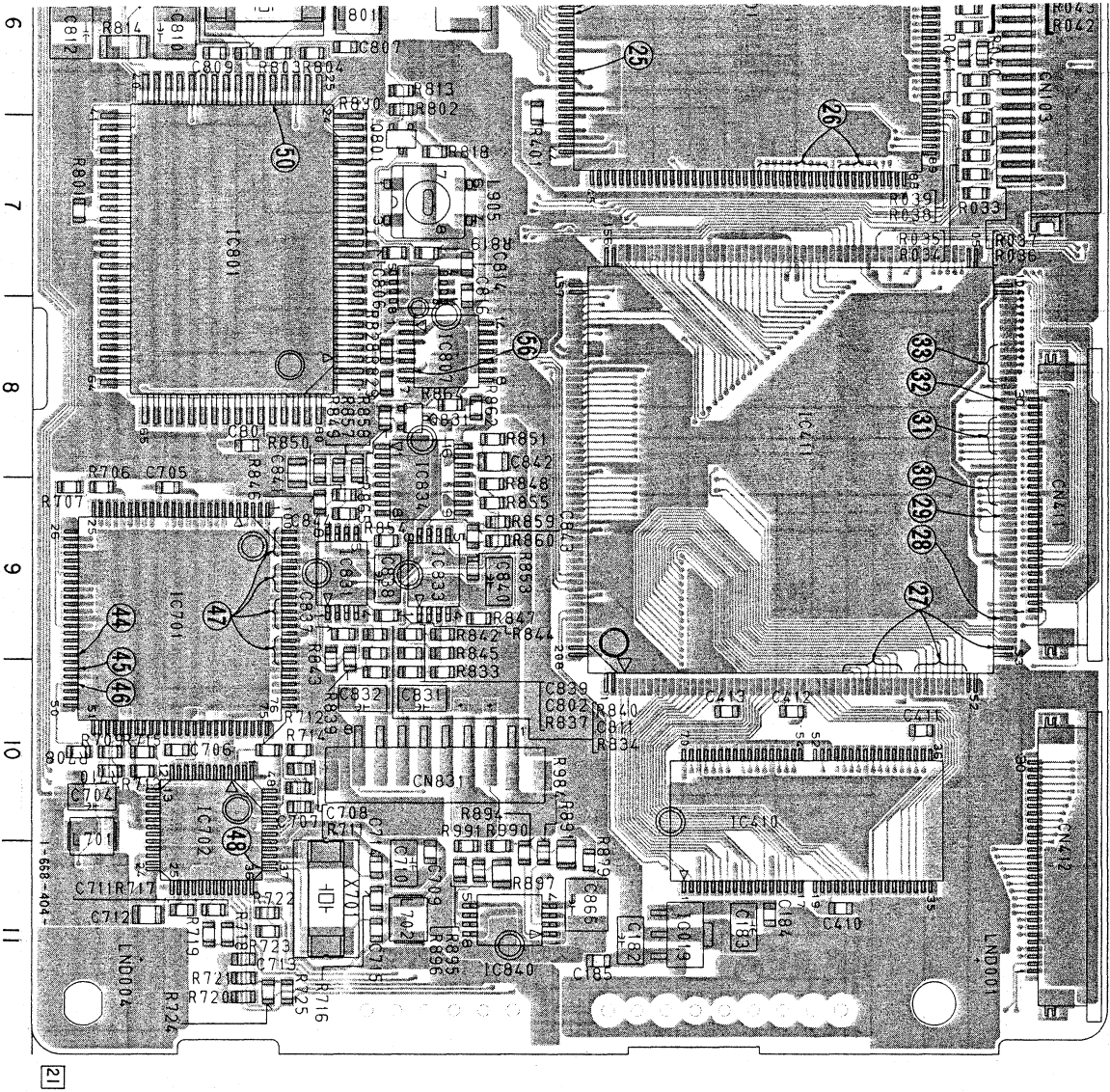


JC-19 (AD/DA CONVERTER, S1 AFC, U1, D1, C1 SPCON, MODE, DV IN/OUT, AUDIO CORE, DIGITAL AUDIO, AUDIO D/A, A/D CONVERTER) PRINTED WIRING BOARD
— Ref. No.: JC-19 board; 2,000 series —





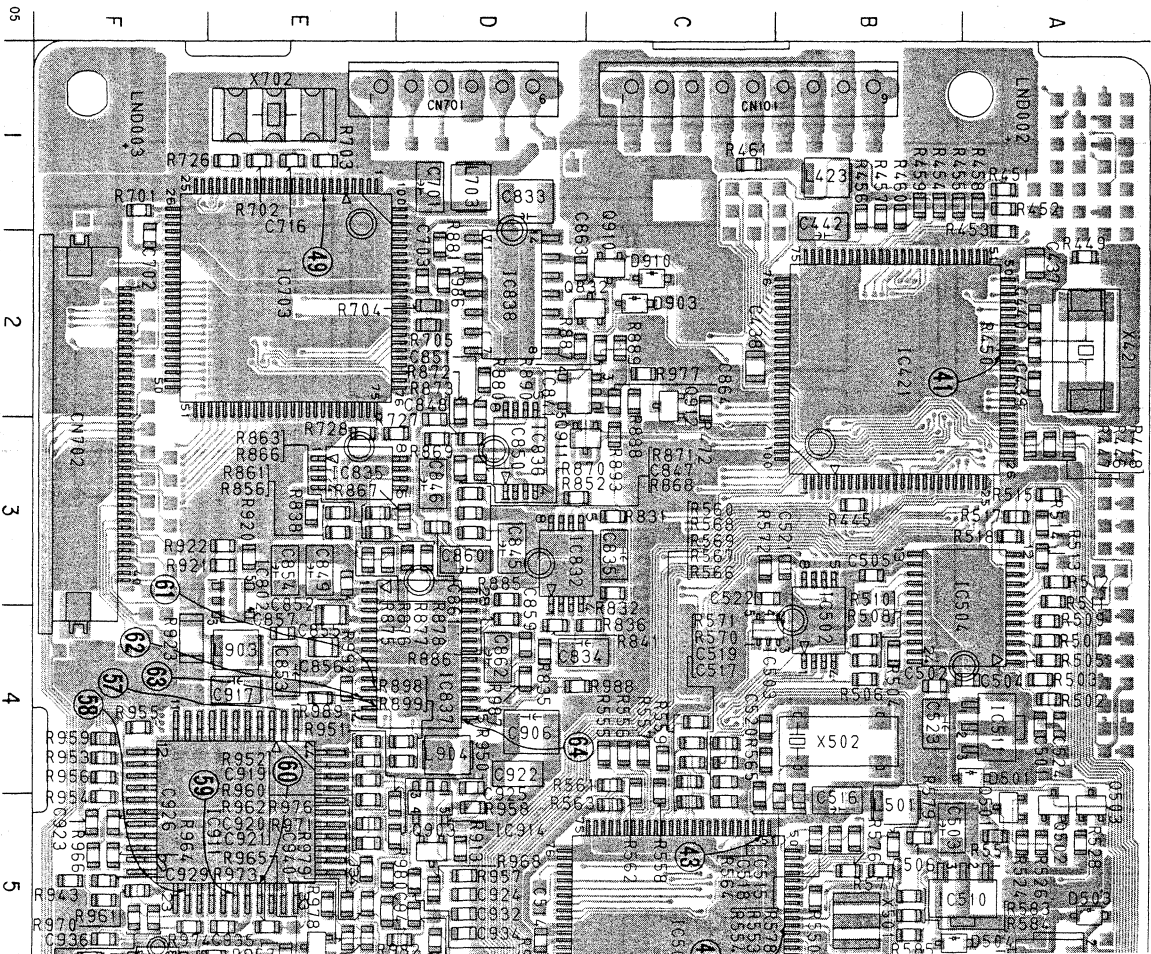
ED WIRING BOARD



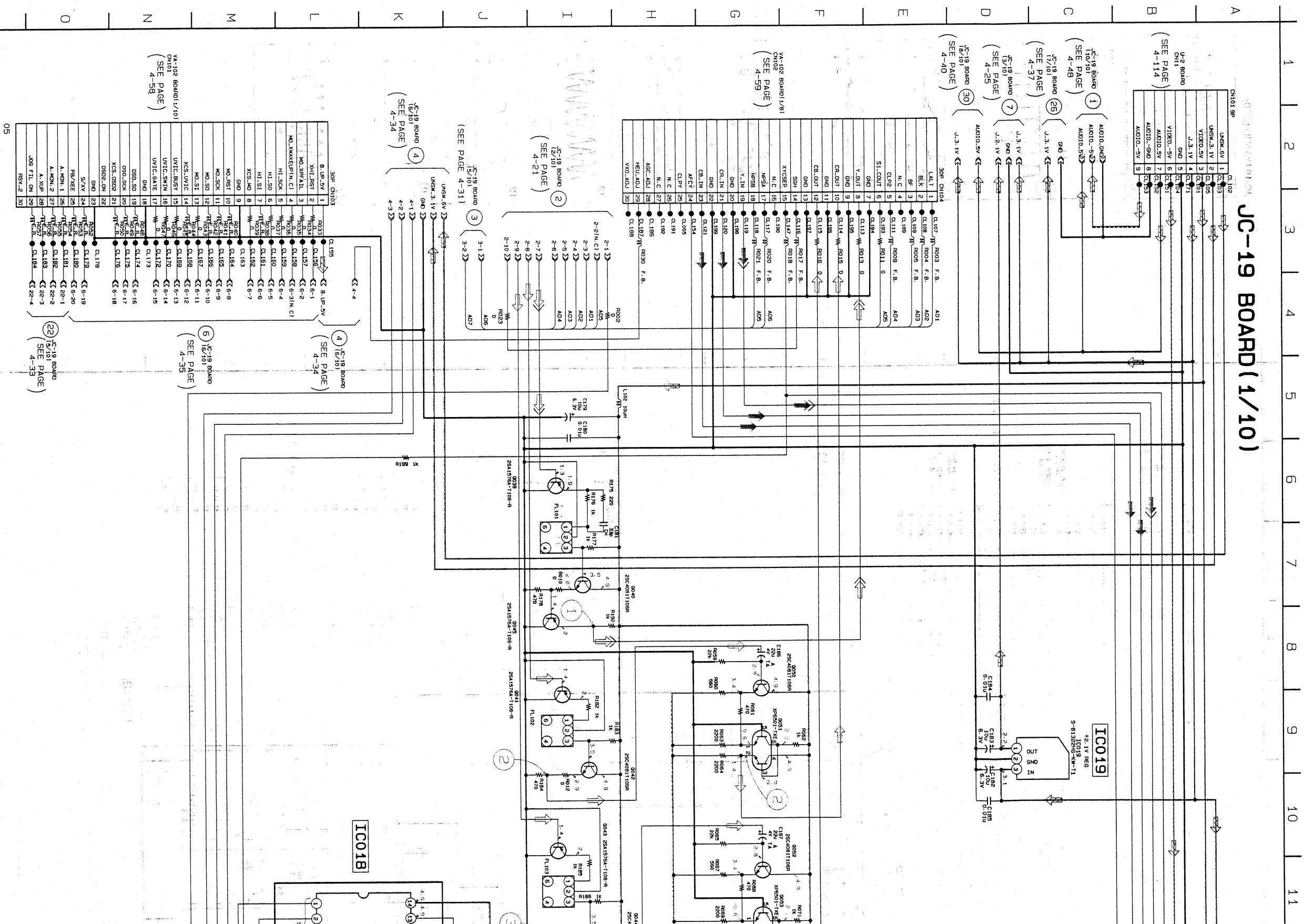
- For Printed Wiring Board.
- This board is six-layer print board. However, the pattern layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this pattern is printed on this diagram.
- Chip transistor

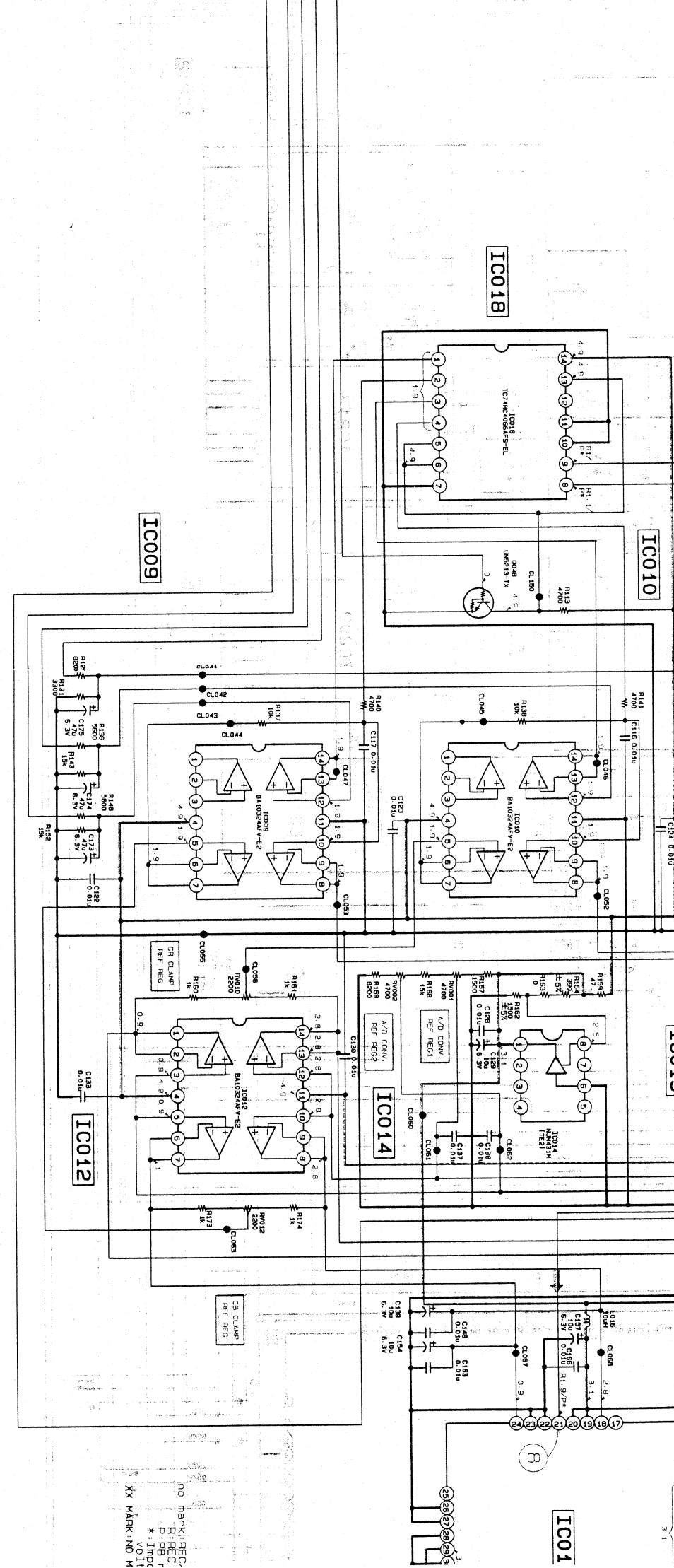
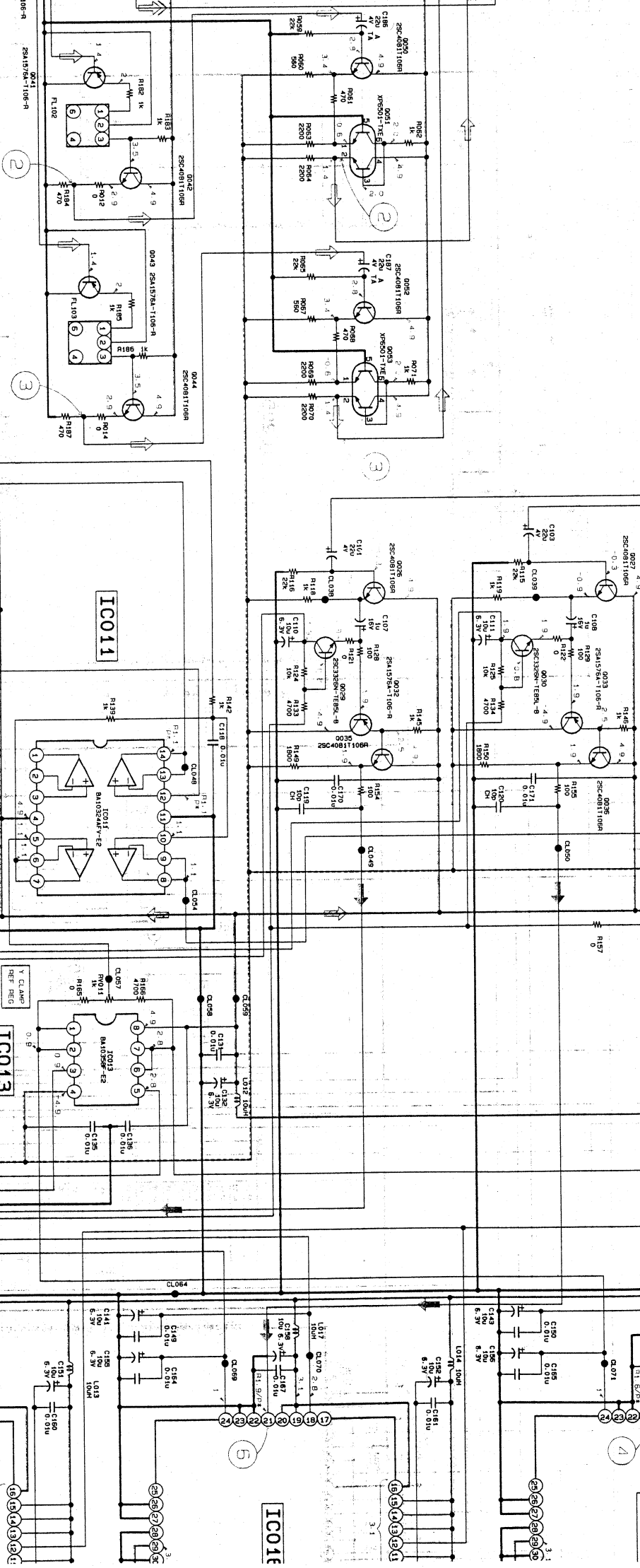
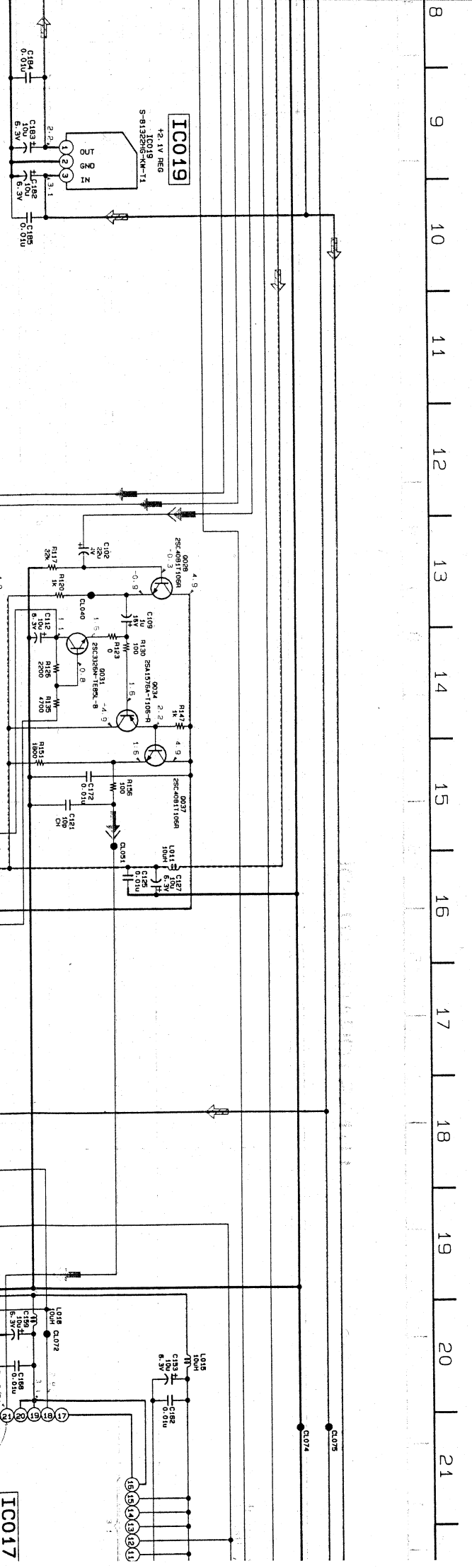


JC-19 BOARD (SIDE B)

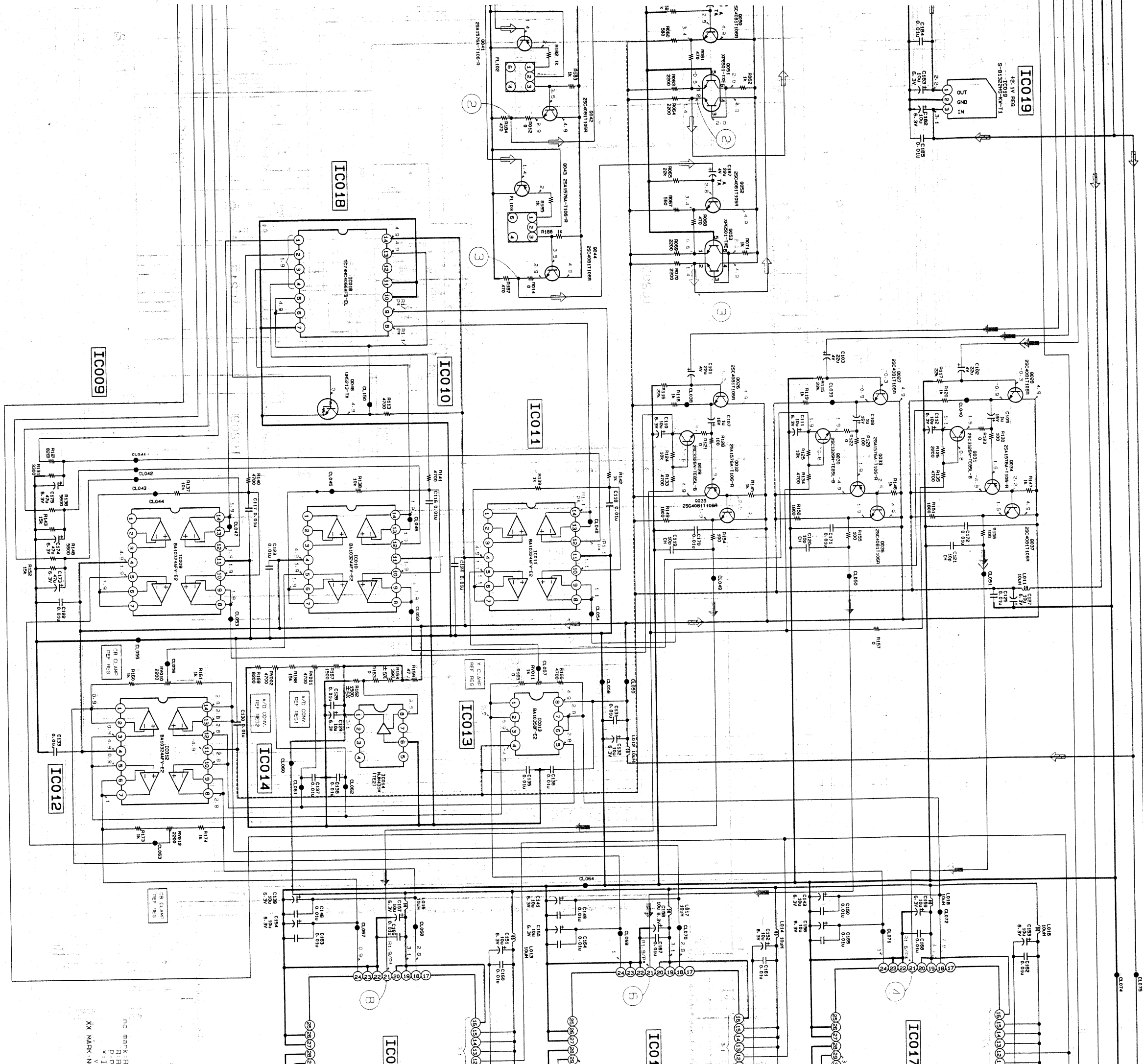


JC-19 (AD/DA CONVERTER) SCHEMATIC DIAGRAM
— Ref. No. : JC-19 board; 2,000 series —

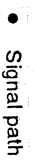
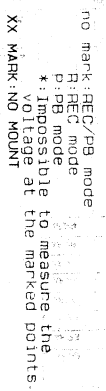




no mark: REC
P: REC
* J: DO
XX MARK: NO M



no mark R:R
p:p
* 1
XX MARK N

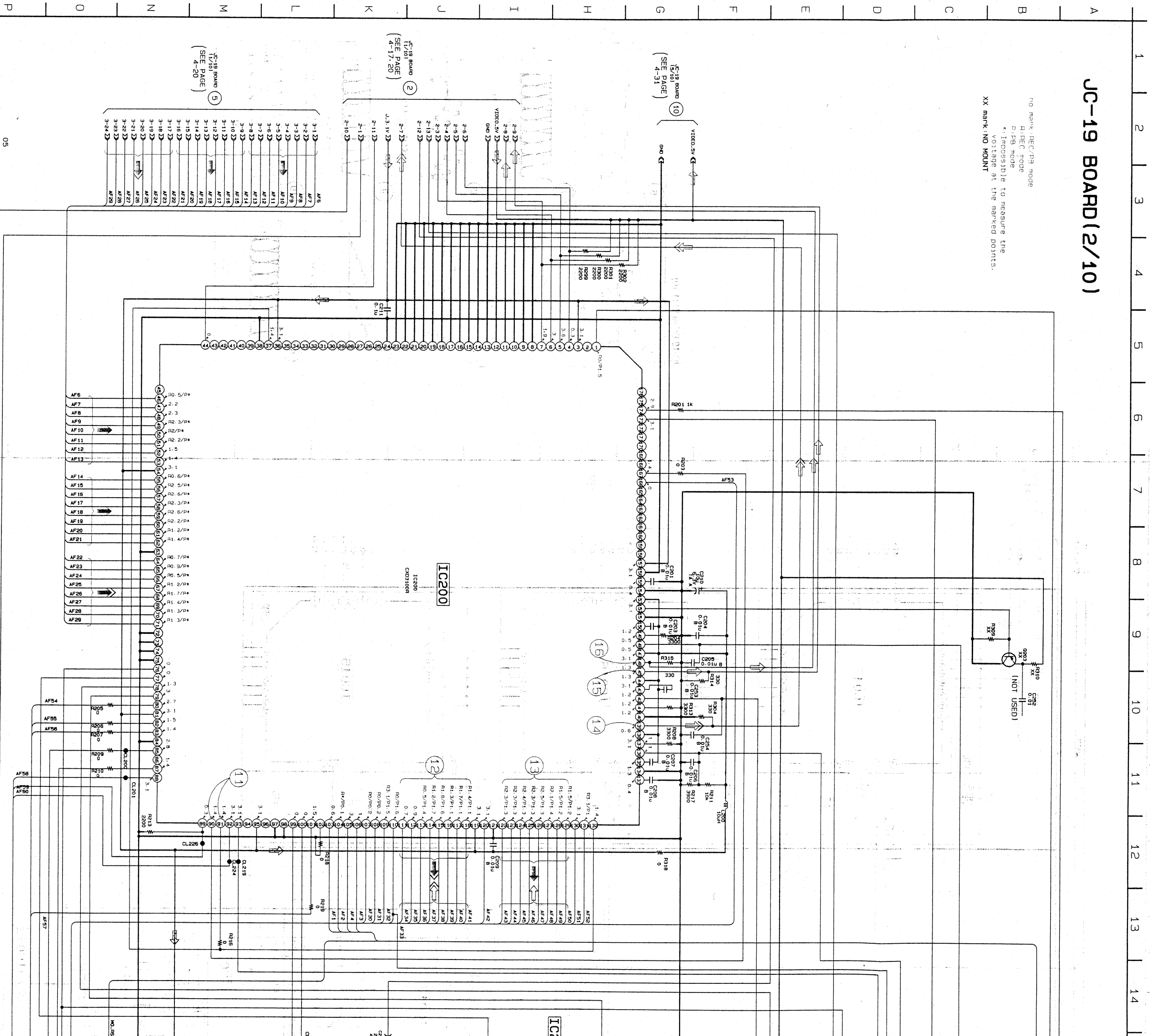
4-20

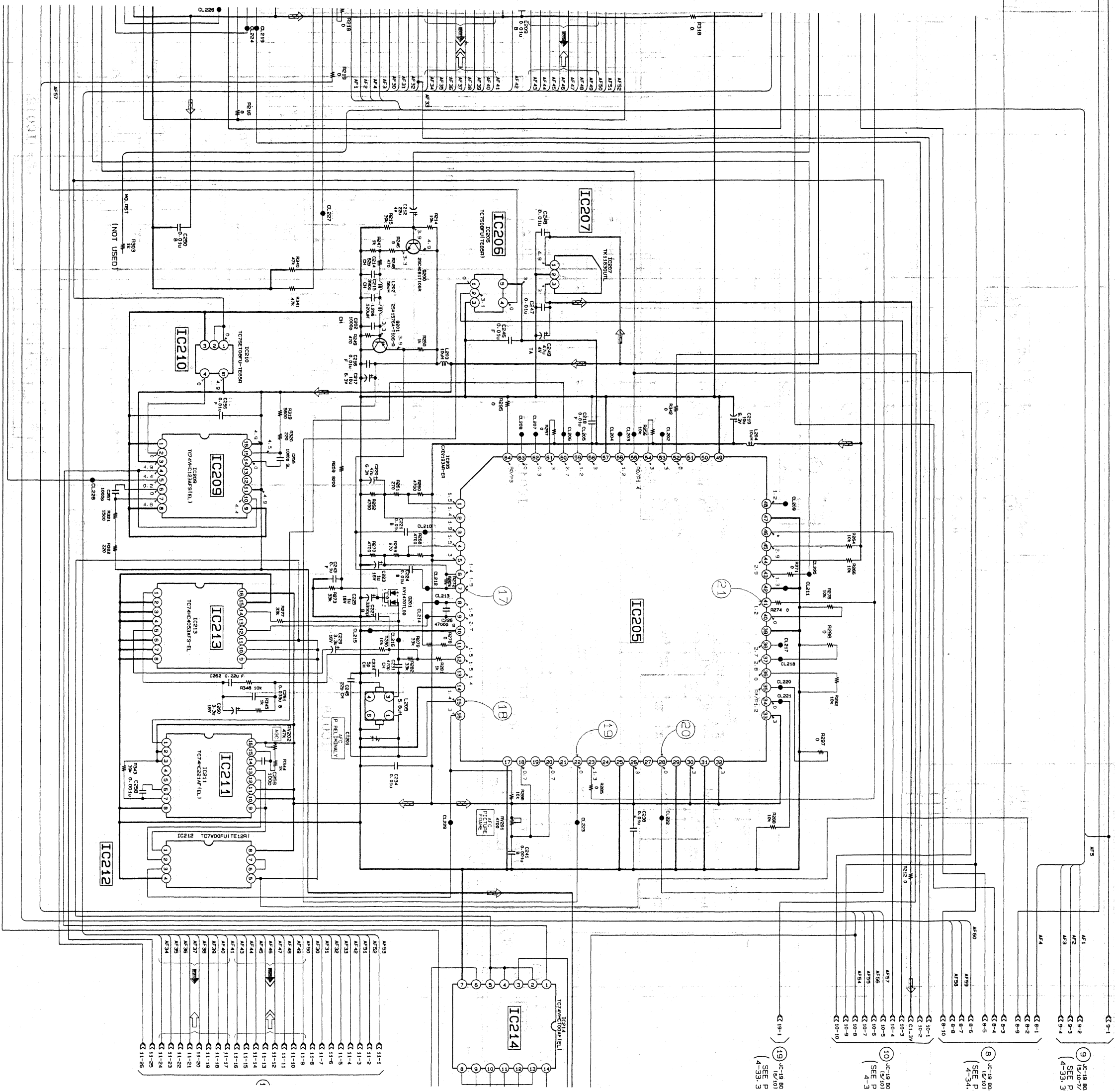
JC-19 (S1 AFC) SCHEMATIC DIAGRAM
— Ref. No. : JC-19 board, 2,000 series —

• Refer to page 4-13 for Printed Wiring Board.

JC-19 BOARD (2/10)

no mark: REC/P3 mode
R: REC mode
P: PB mode
*: Impossible to measure the
voltage at the marked points.
XX mark: NO MOUNT





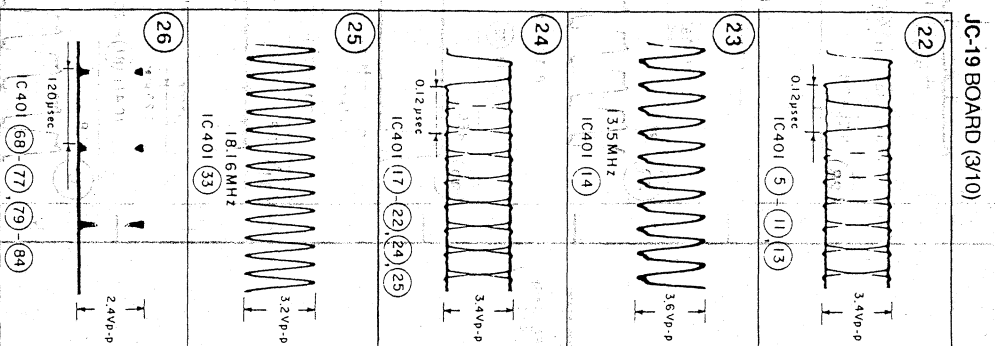
JC-19 (U1) SCHEMATIC DIAGRAM

— Ref. No. : JC-19 board; 2,000 series —

• Refer to page 4-13 for Printed Wiring Board.

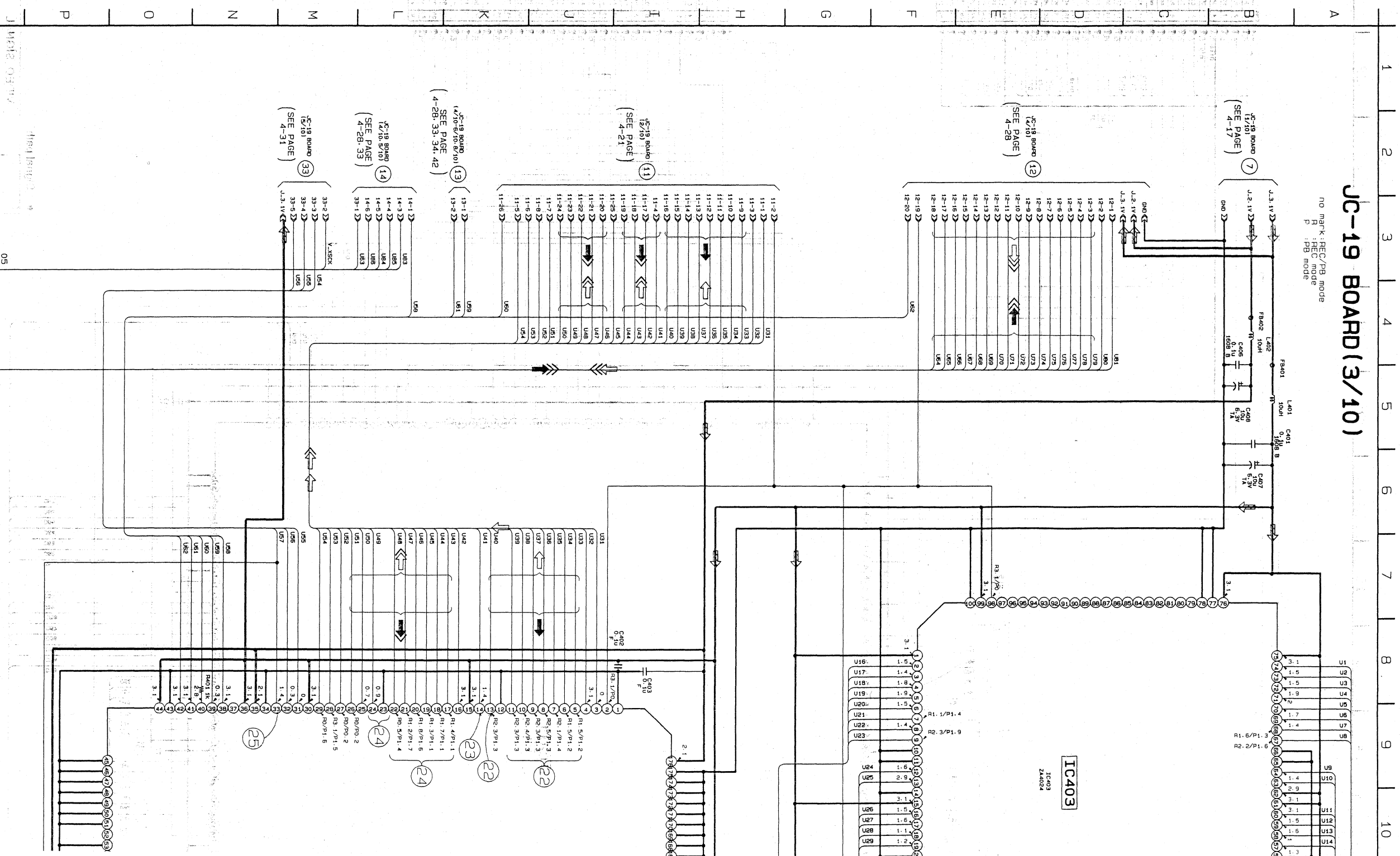
JC-19 BOARD (3/10)

no mark: REC/PB mode
R: REC mode
P: PB mode



• Signal path

VIDEO SIGNAL			
CHROMA	Y	Y/CHROMA	
REC	→	→	→
PB	→	→	→



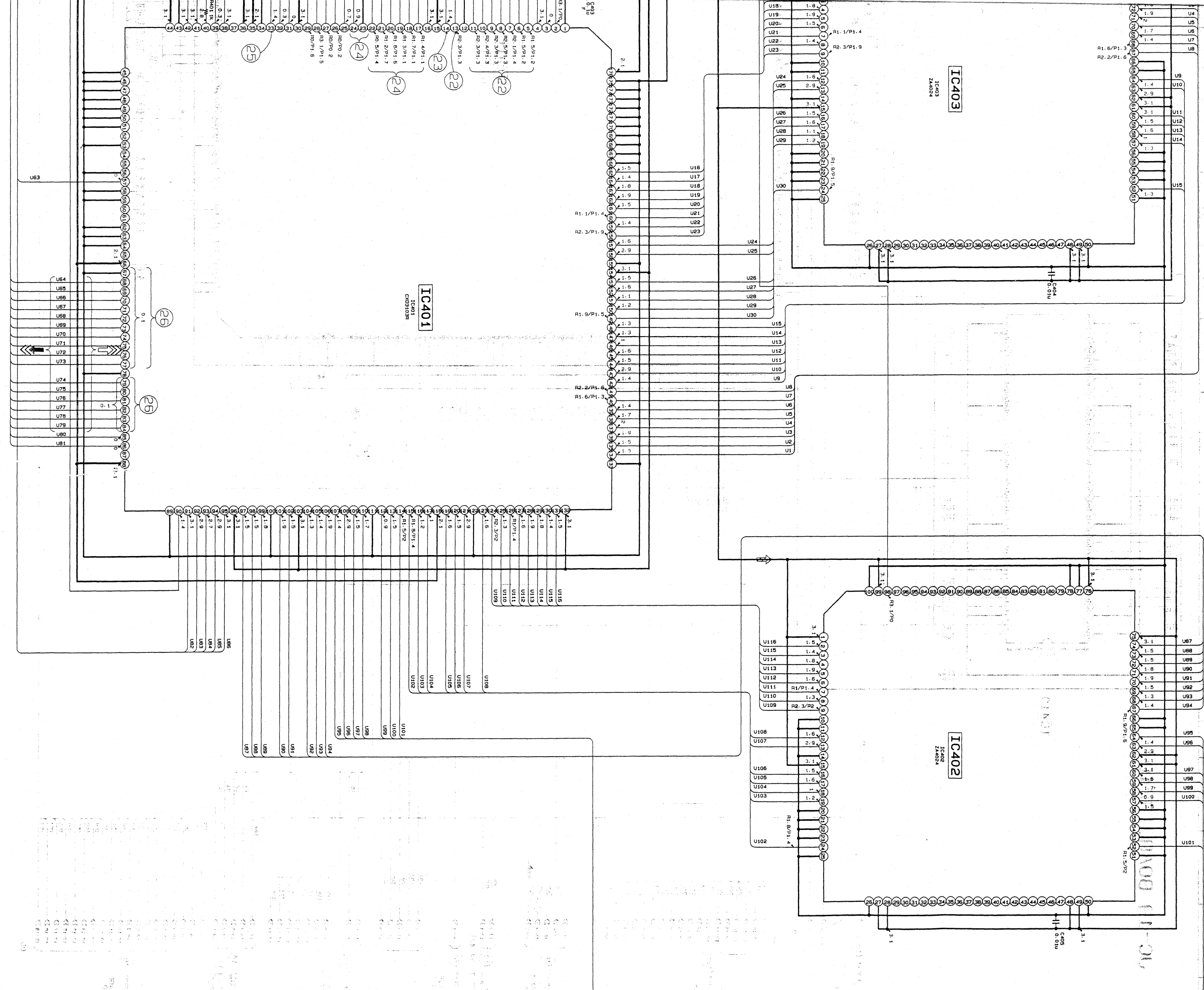
board.

9 10 11 12 13 14 15 16 17 18 19 20 21 22

IC401 output to IC402 and IC403

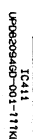
IC402 output to IC403 and IC401

IC403 output to IC401 and IC402

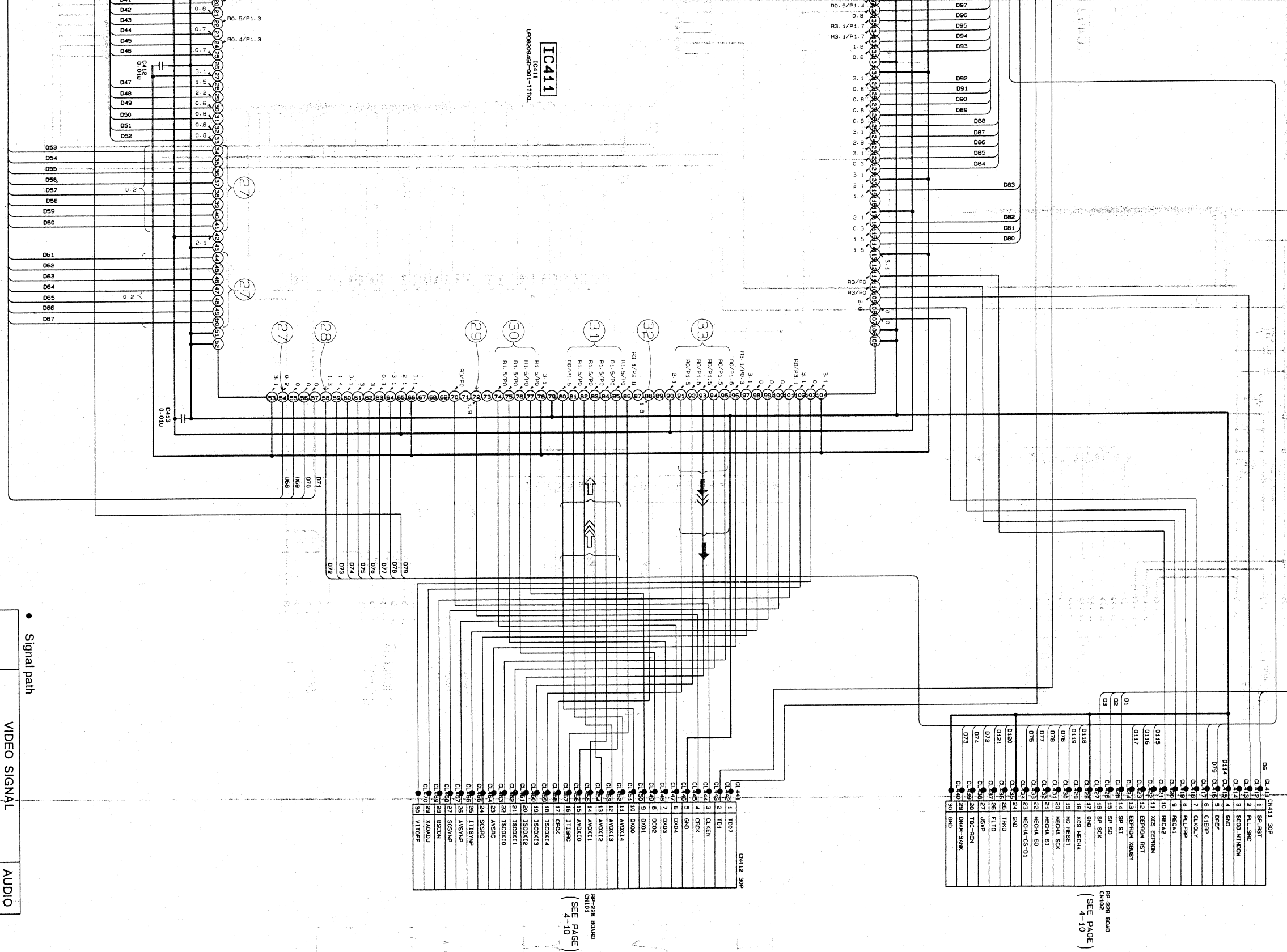


• Refer to page 4-13 for Printed Wiring Board.

• Refer to page 4-13 for Printed Wiring Board.

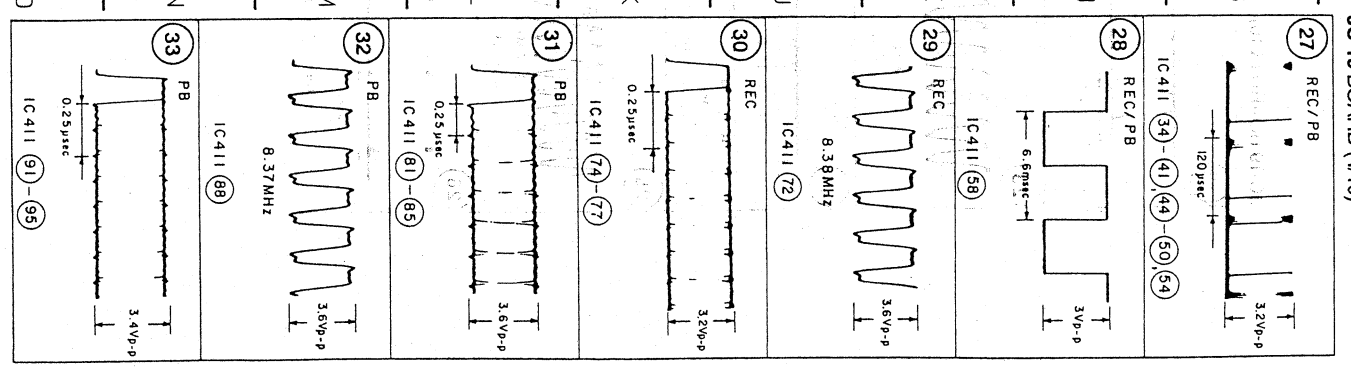


14 15 16 17 18 19 20 21 22 23 24



• Signal path

VIDEO SIGNAL			AUDIO
CHROMA	Y	Y/CHROMA	SIGNAL
REC			
PB			



JC-19 BOARD (4/10)

- Refer to page 4-13 for Printed Wiring Board.

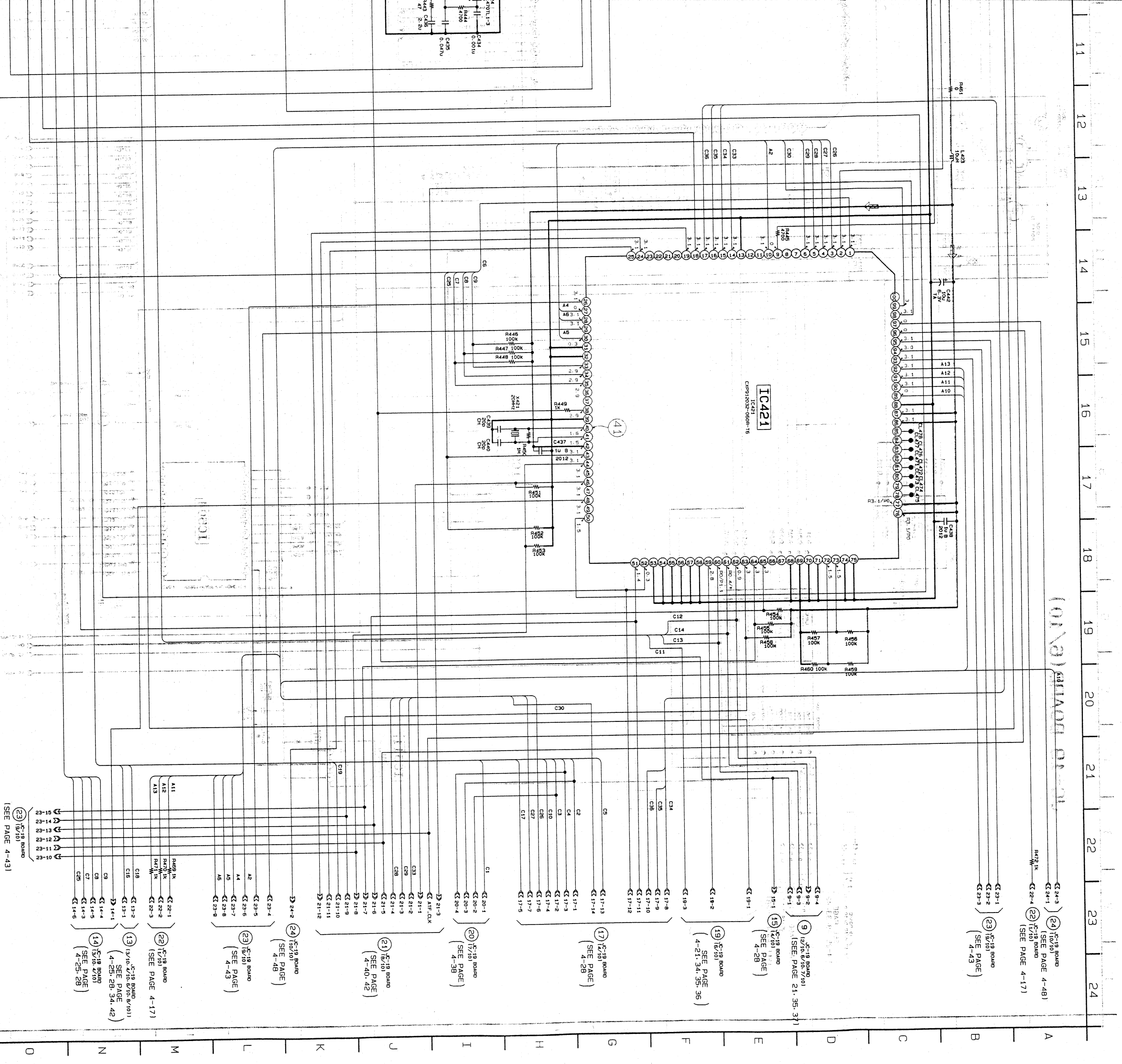
• Refer to page 4-13 for Printed Wiring Board.



Board wiring diagram for C1-A speed of 18000

MANAGED CHANGES (3000) C1-A

CHANGES C Board C1-A 07-19-88



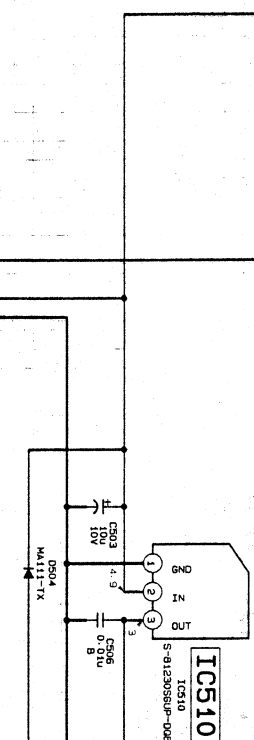
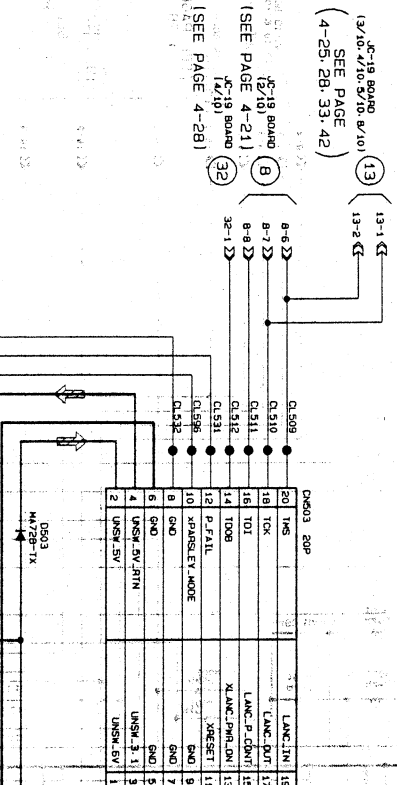
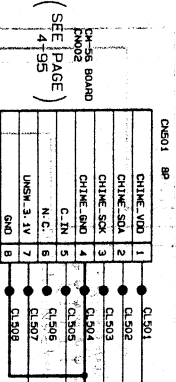
JC-19 (MODE) SCHEMATIC DIAGRAM

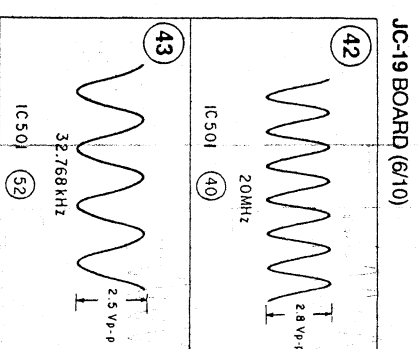
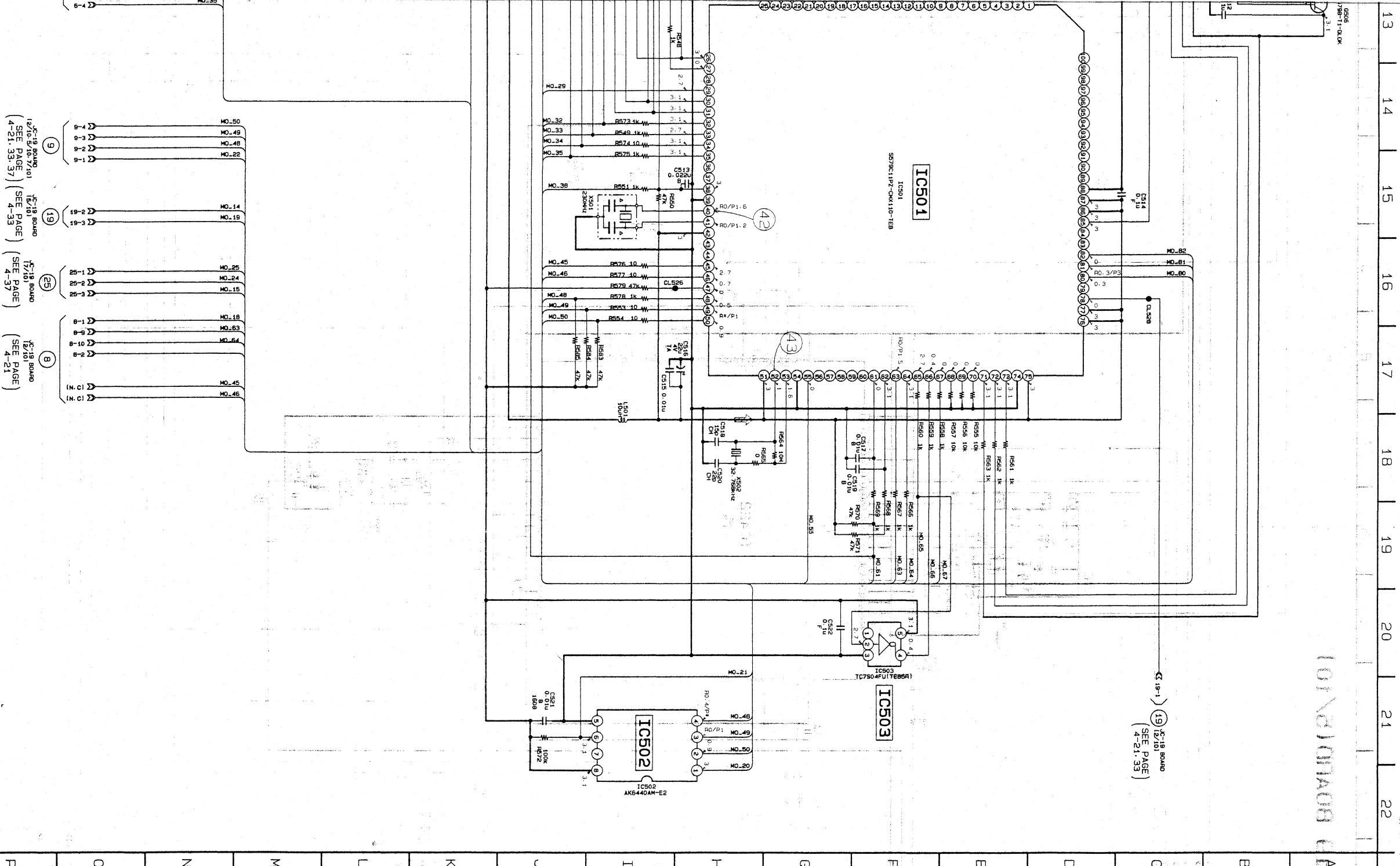
• Refer to page 4-13 for Printed Wiring Board.

— Ref. No. : JC-19 board, 2,000 series —

JC-19 BOARD(6/10)

no mark: REC/PB mode
R REC mode
PB PB mode

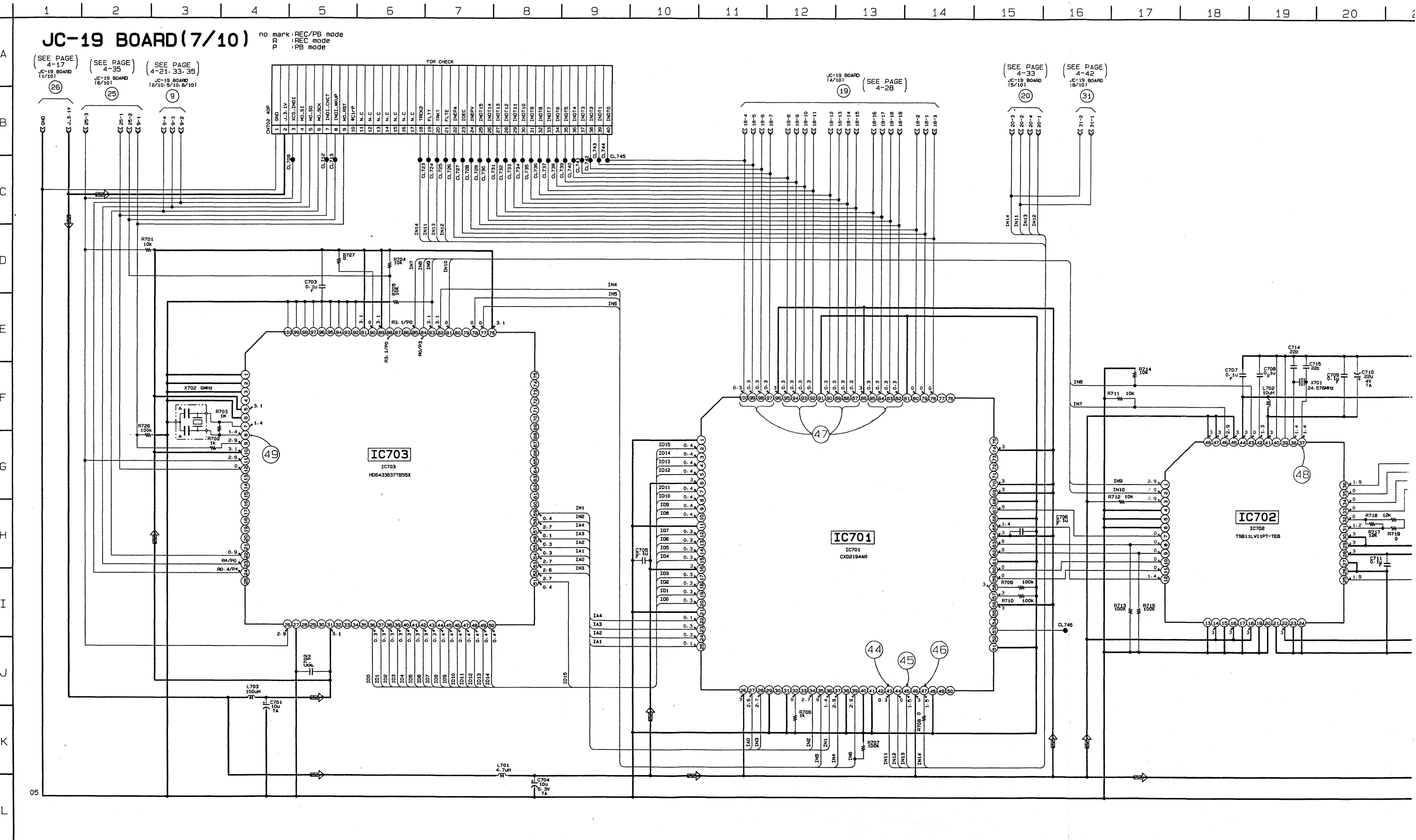




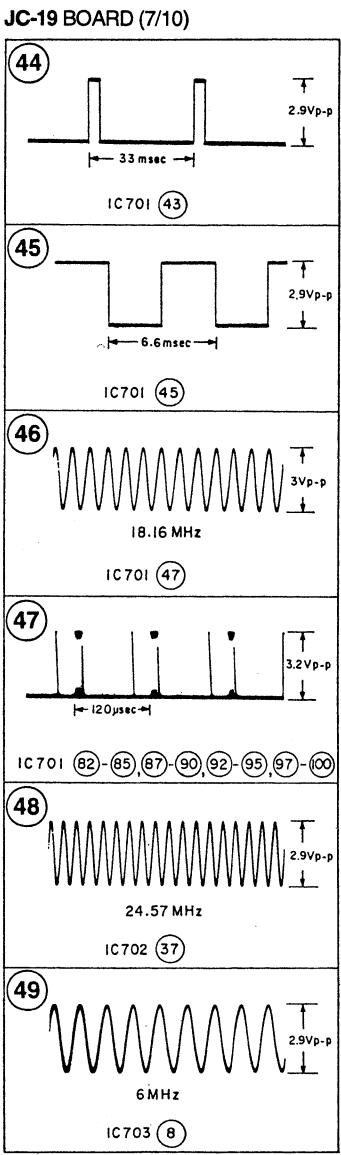
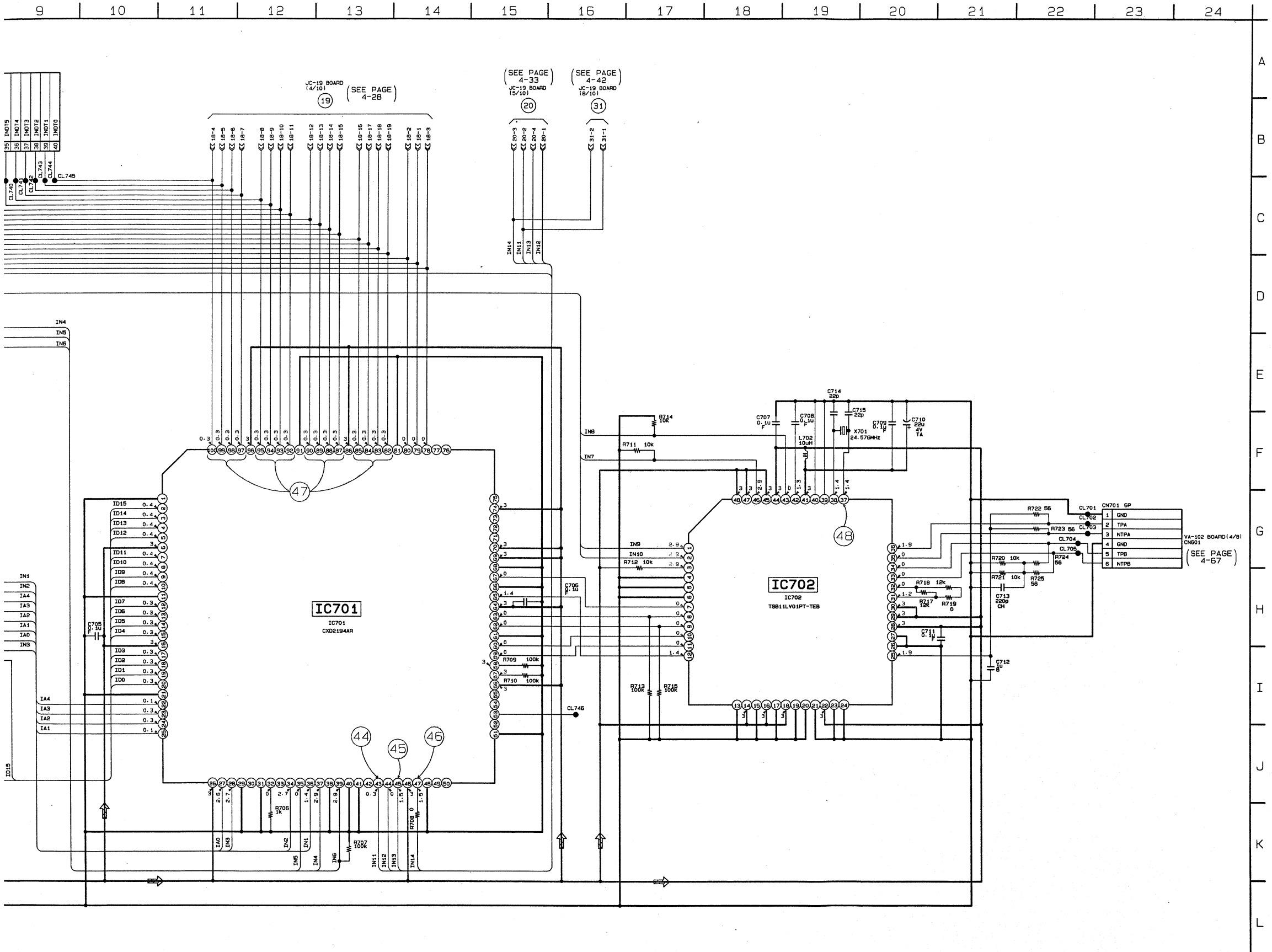
JC-19 (DV IN/OUT) SCHEMATIC DIAGRAM

• Refer to page 4-13 for Printed Wiring Board.

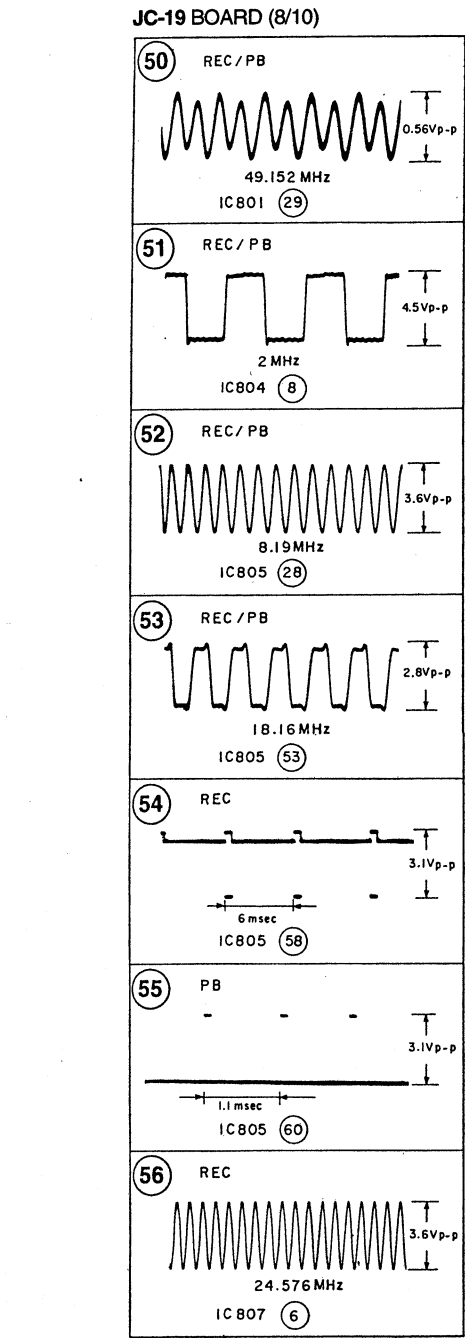
— Ref. No. : JC-19 board; 2,000 series —



Board.

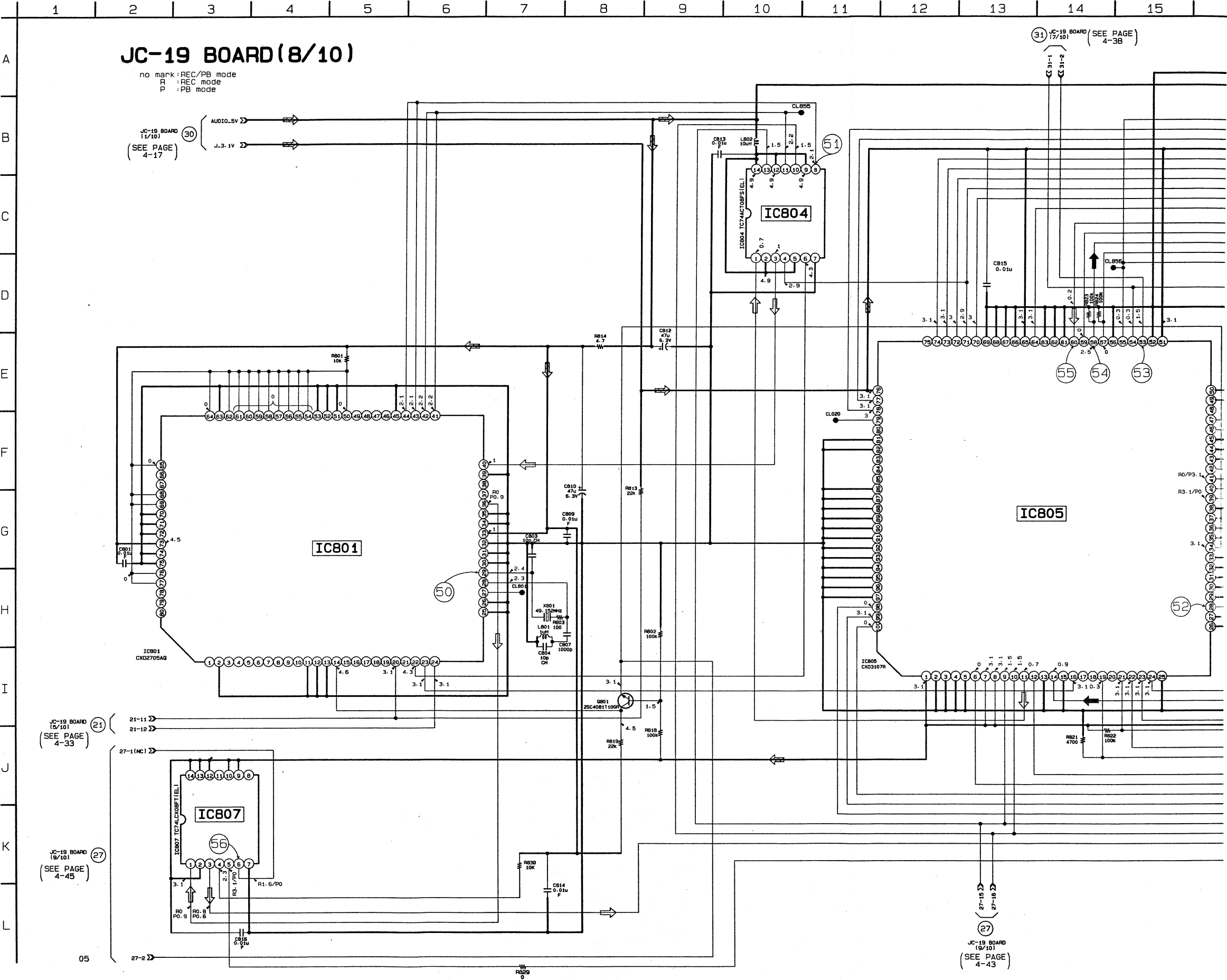


• Refer to page 4-13 for Printed Wiring Board.



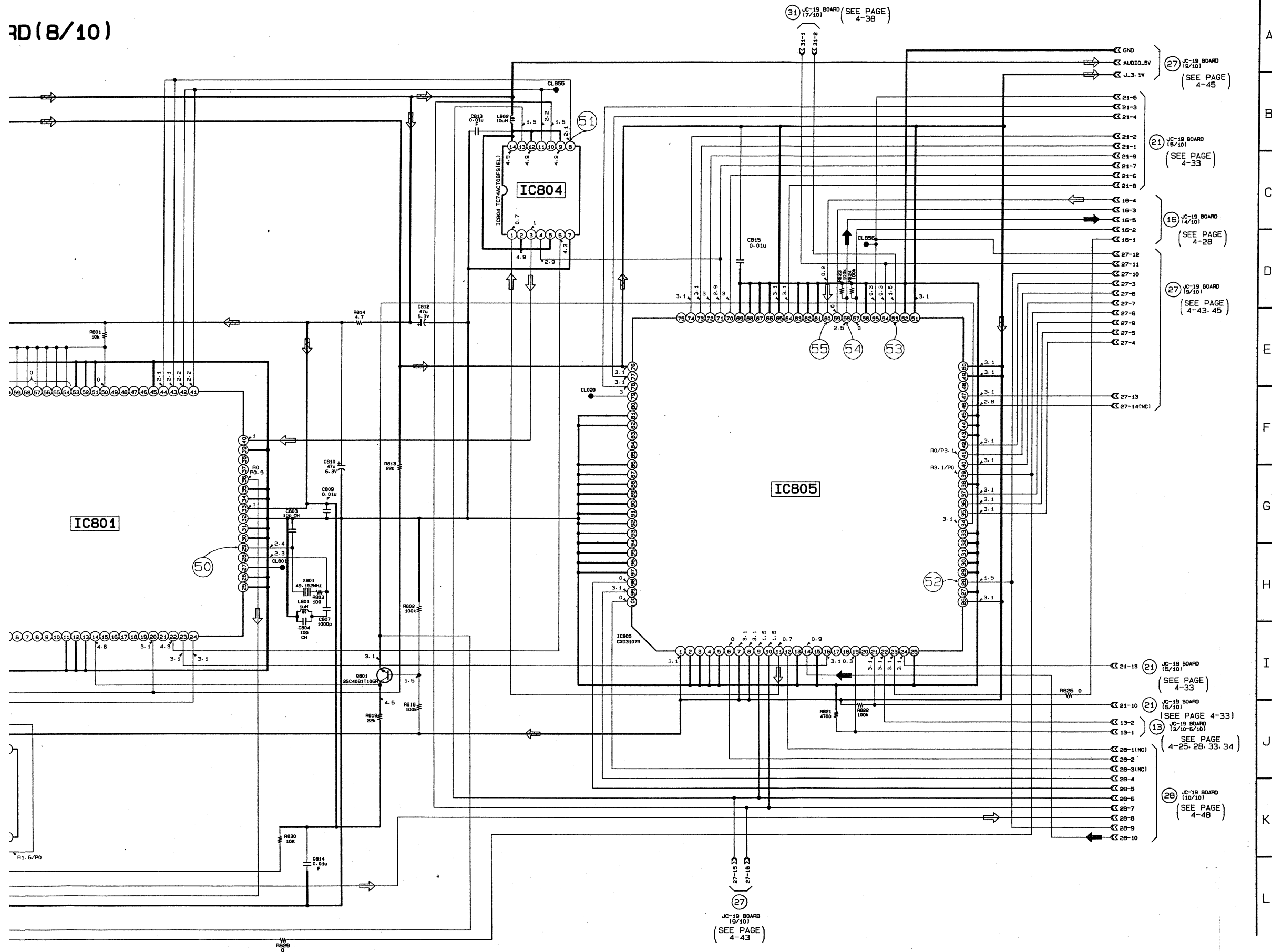
• Signal path

	AUDIO SIGNAL
REC	➡
PB	➡

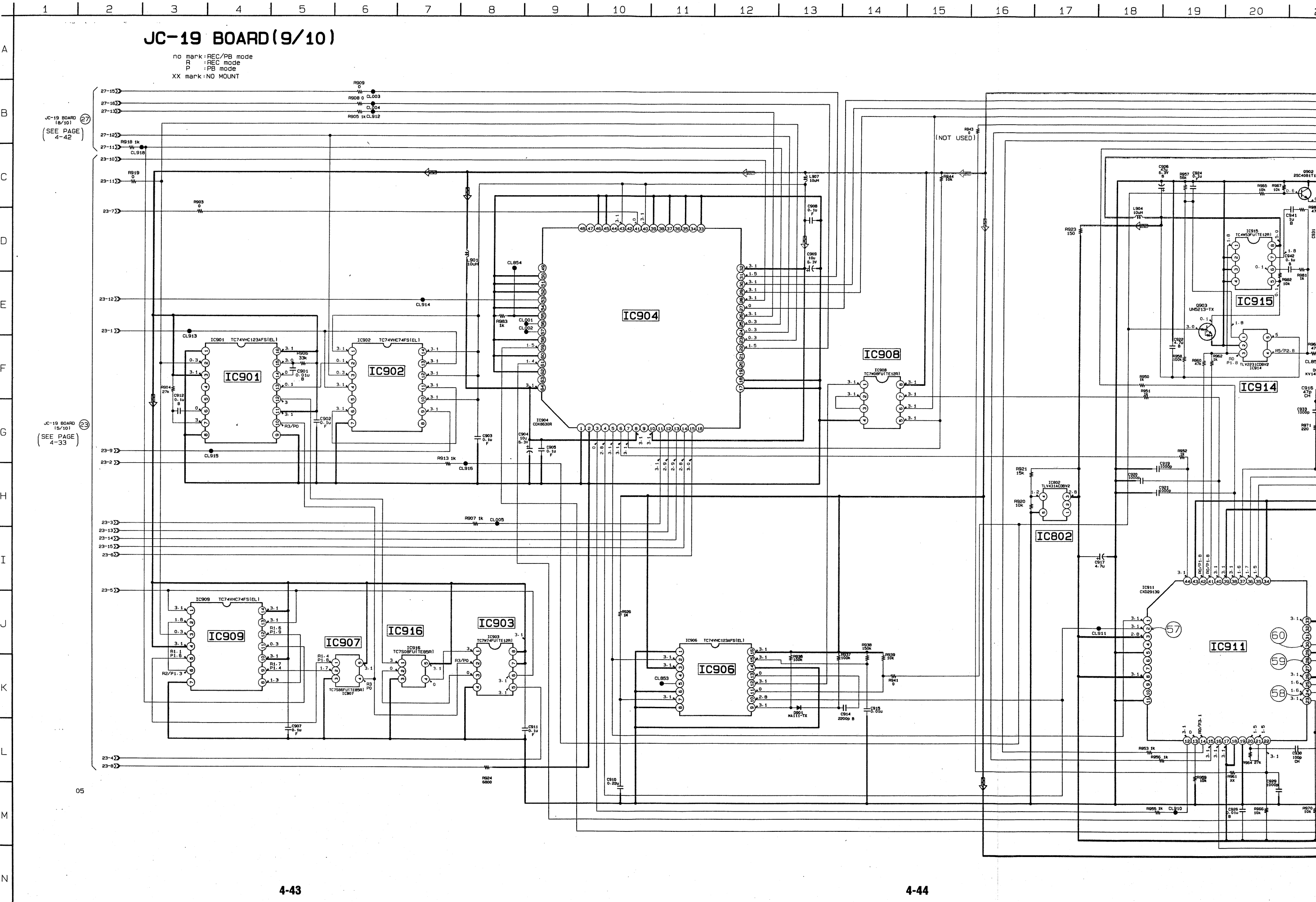


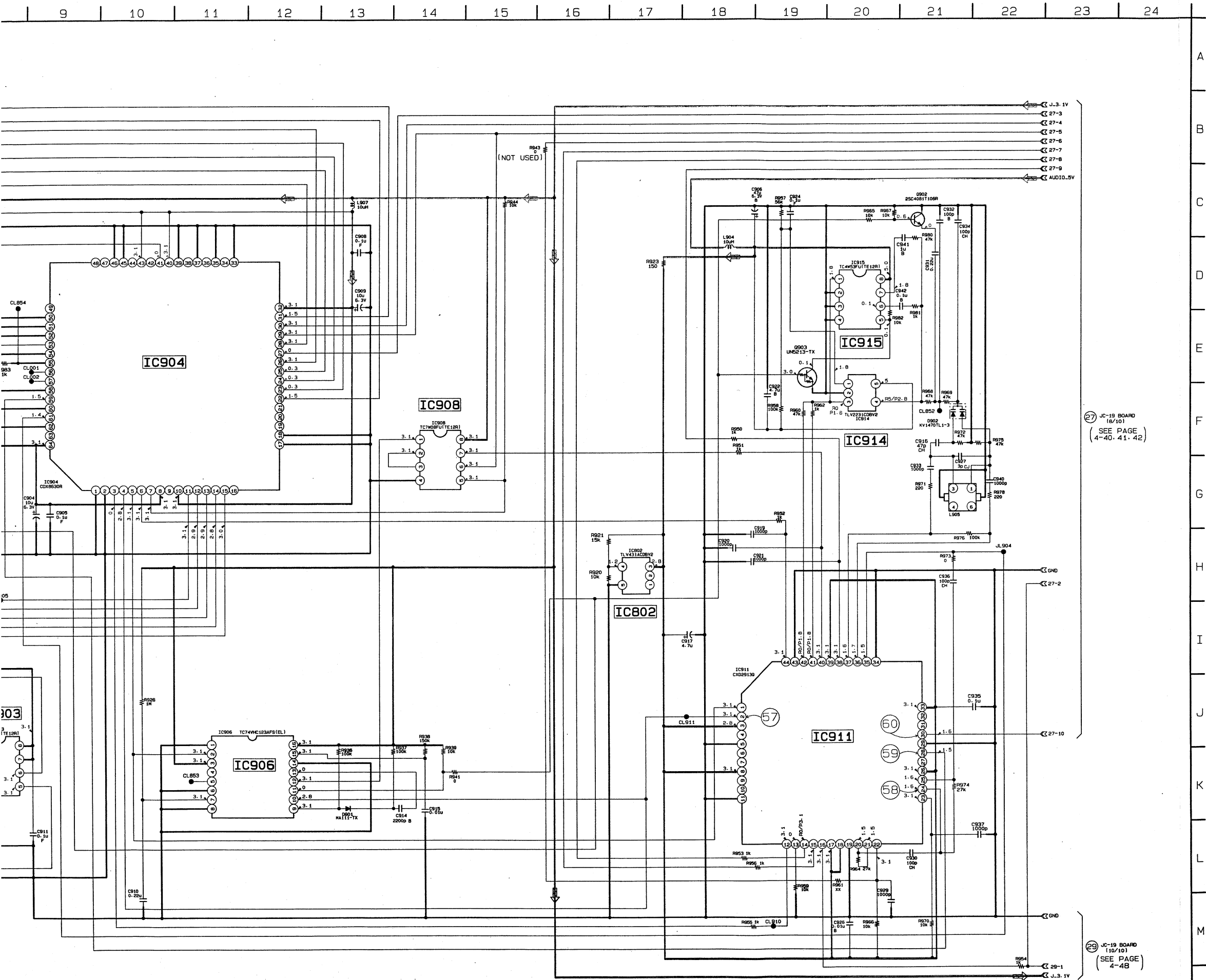
board.

RD(8/10)



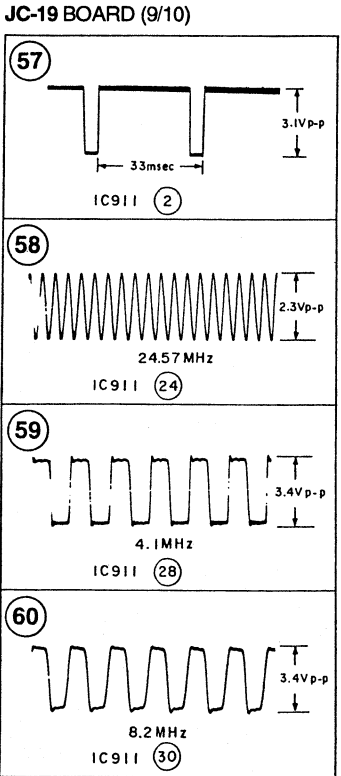
— Ref. No. : JC-19 board; 2,000 series —





27 JC-19 BOARD (8/10)
(SEE PAGE 4-40, 41, 42)

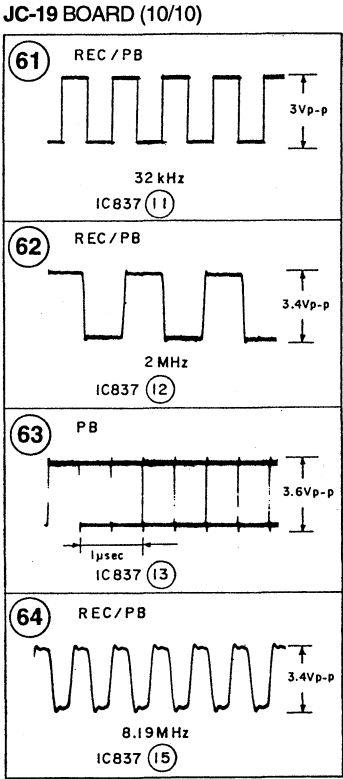
29 JC-19 BOARD (10/10)
(SEE PAGE 4-48)



• Refer to page 4-13 for Printed Wiring Board.

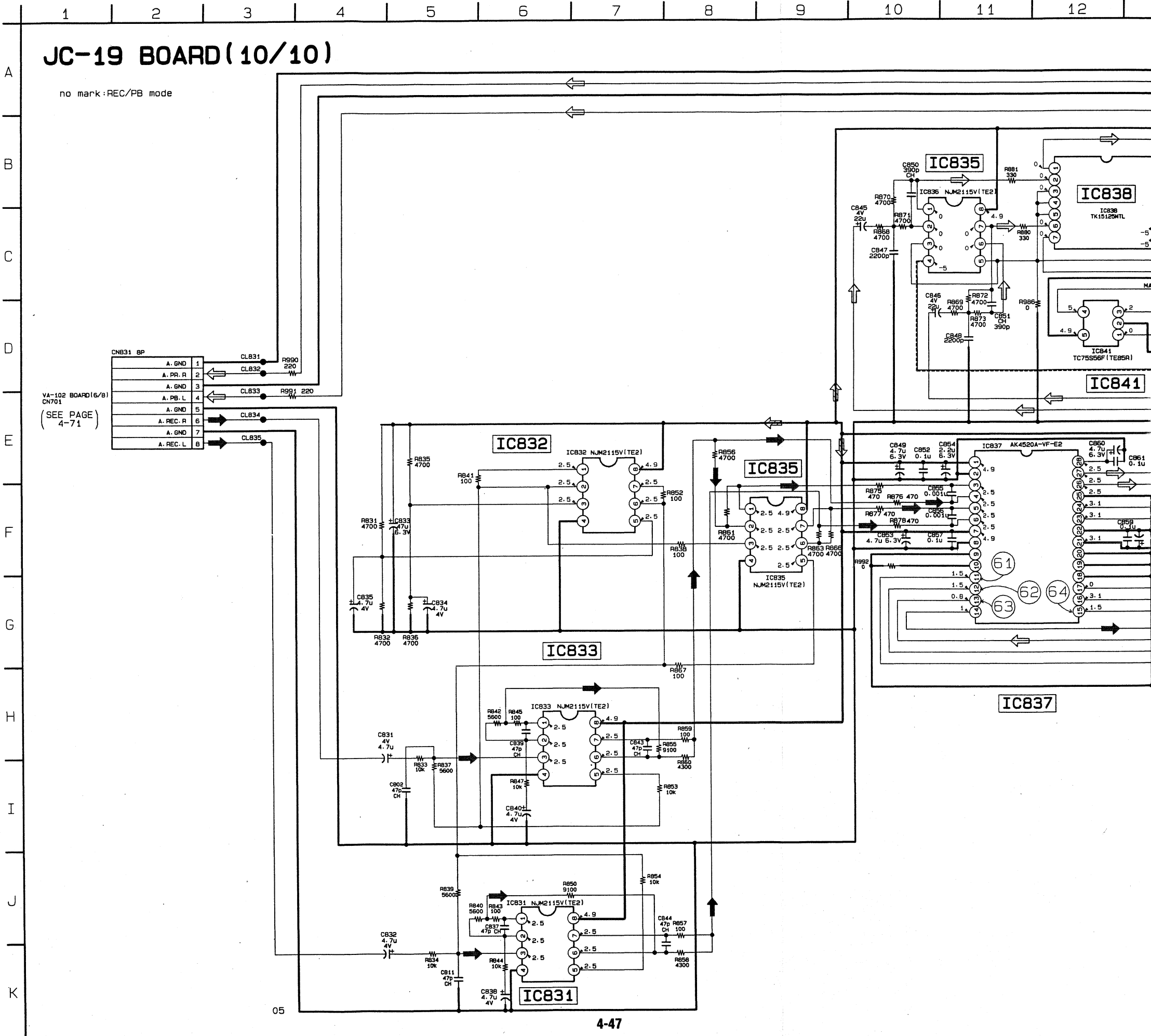
JC-19 BOARD (10/10)

no mark: REC/PB mode

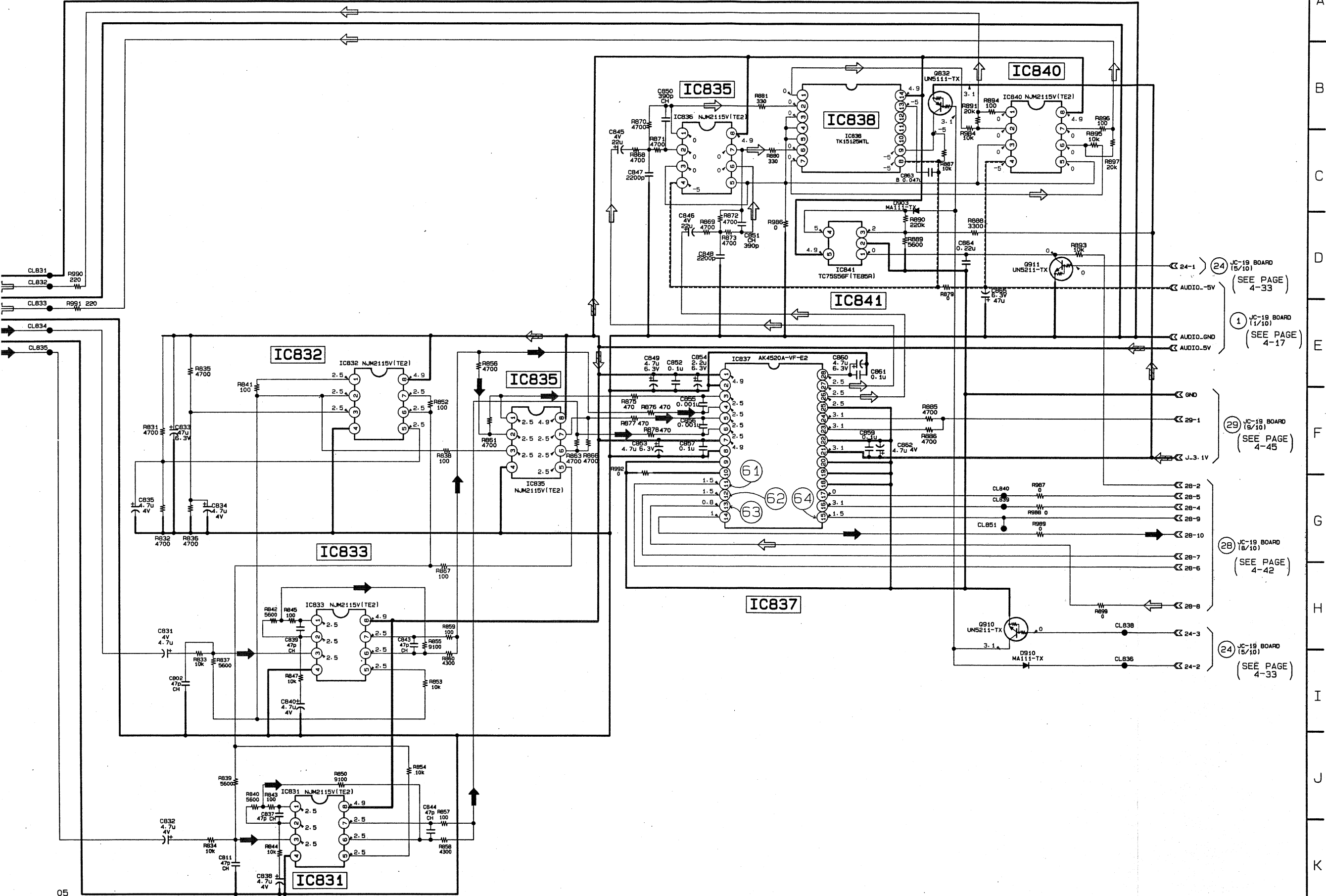


• Signal path

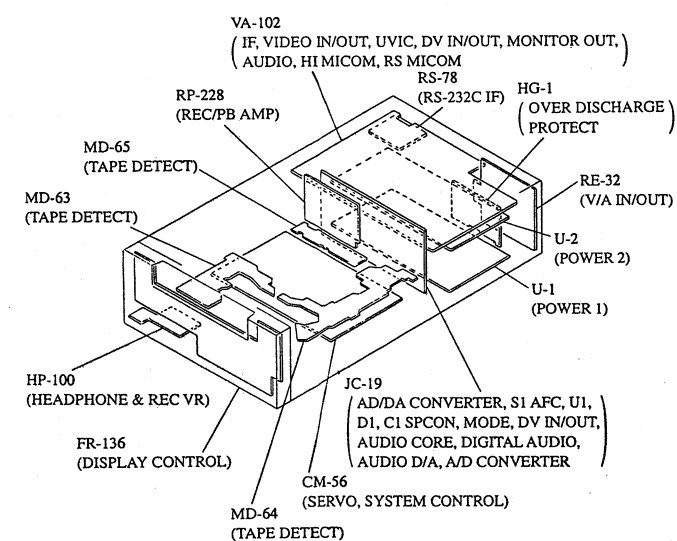
	AUDIO SIGNAL
REC	➡
PB	➡



J(10/10)



— Ref. No. : RE-32 board; 7,000 series —

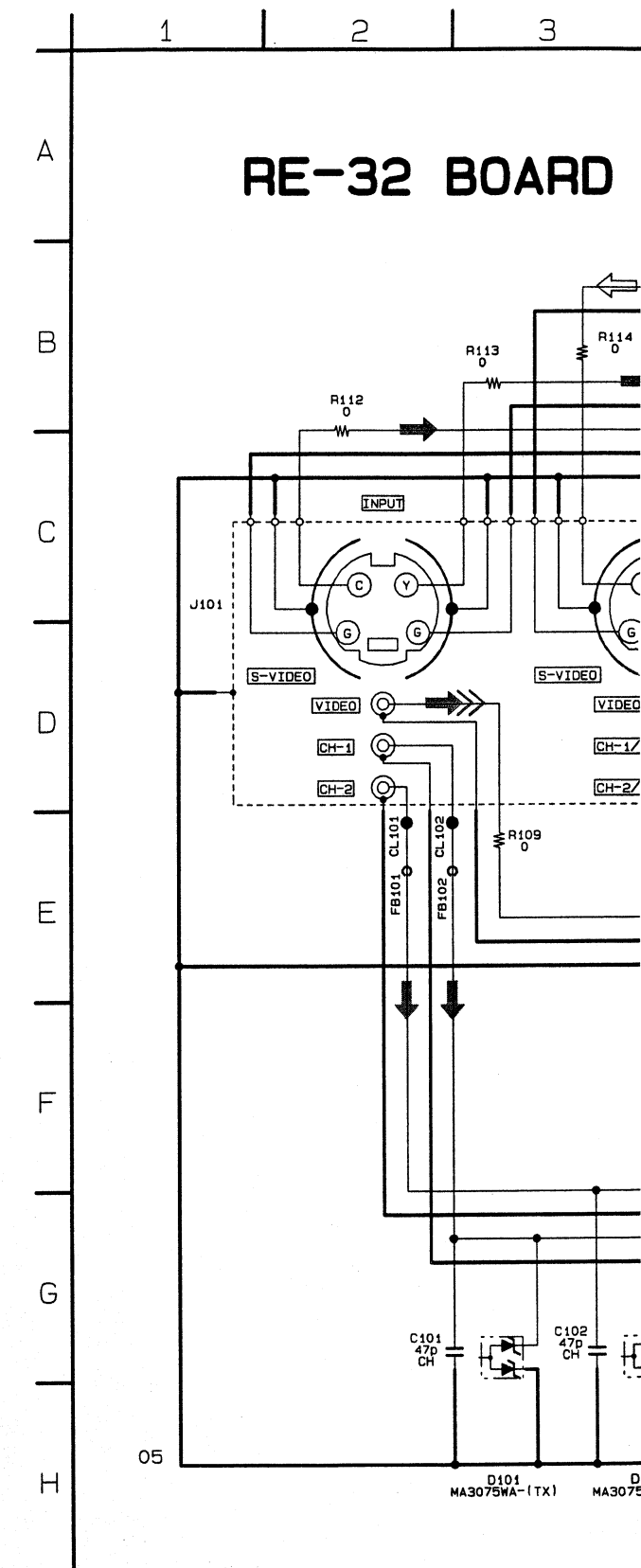


05

4-49

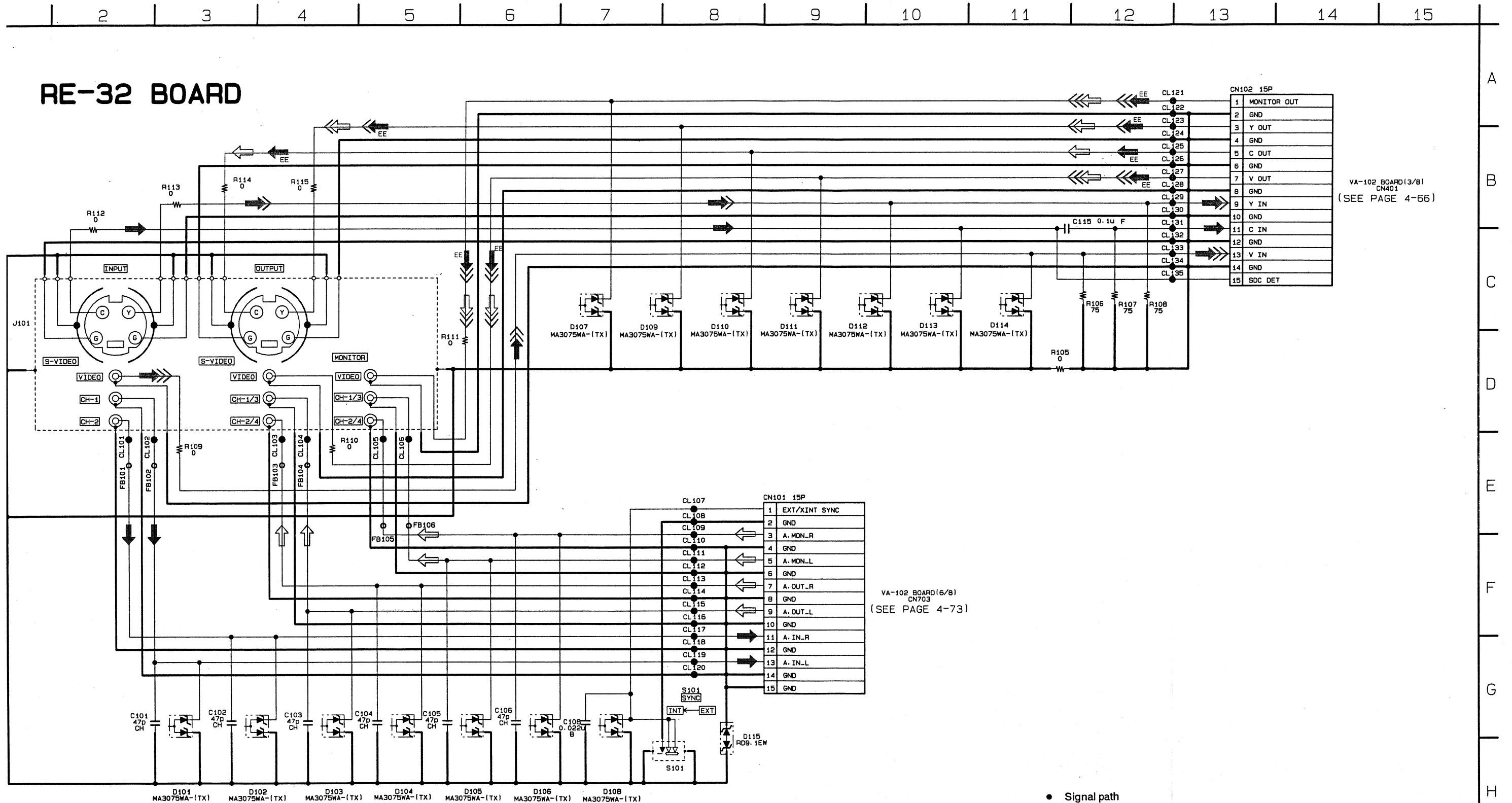
- **For Printed Wiring Board.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.

— Ref. No. : RE-32 board; 7,000 series —



4-50

RE-32 BOARD



- **Signal path**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡➡	➡➡
PB	➡	➡➡	➡➡➡➡	➡

02 (IF, VIDEO IN/OUT, UVIC, DV IN/OUT, MONITOR OUT,
IO, HI MICOM, RS MICOM) PRINTED WIRING BOARD

f. No. : VA-102 board; 1,000 series —

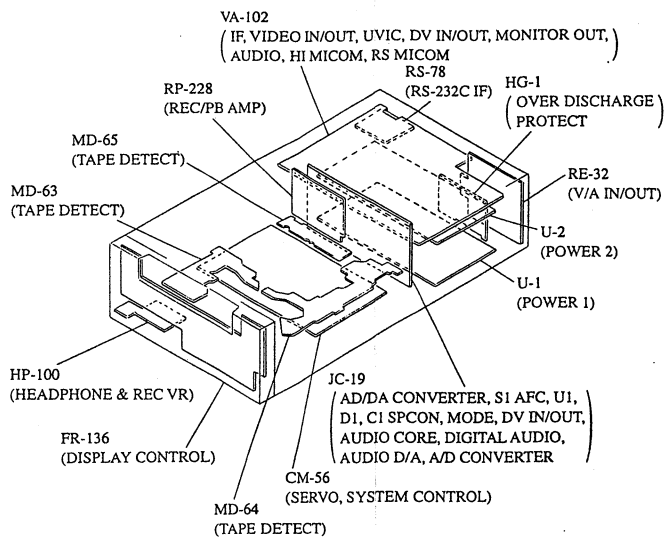
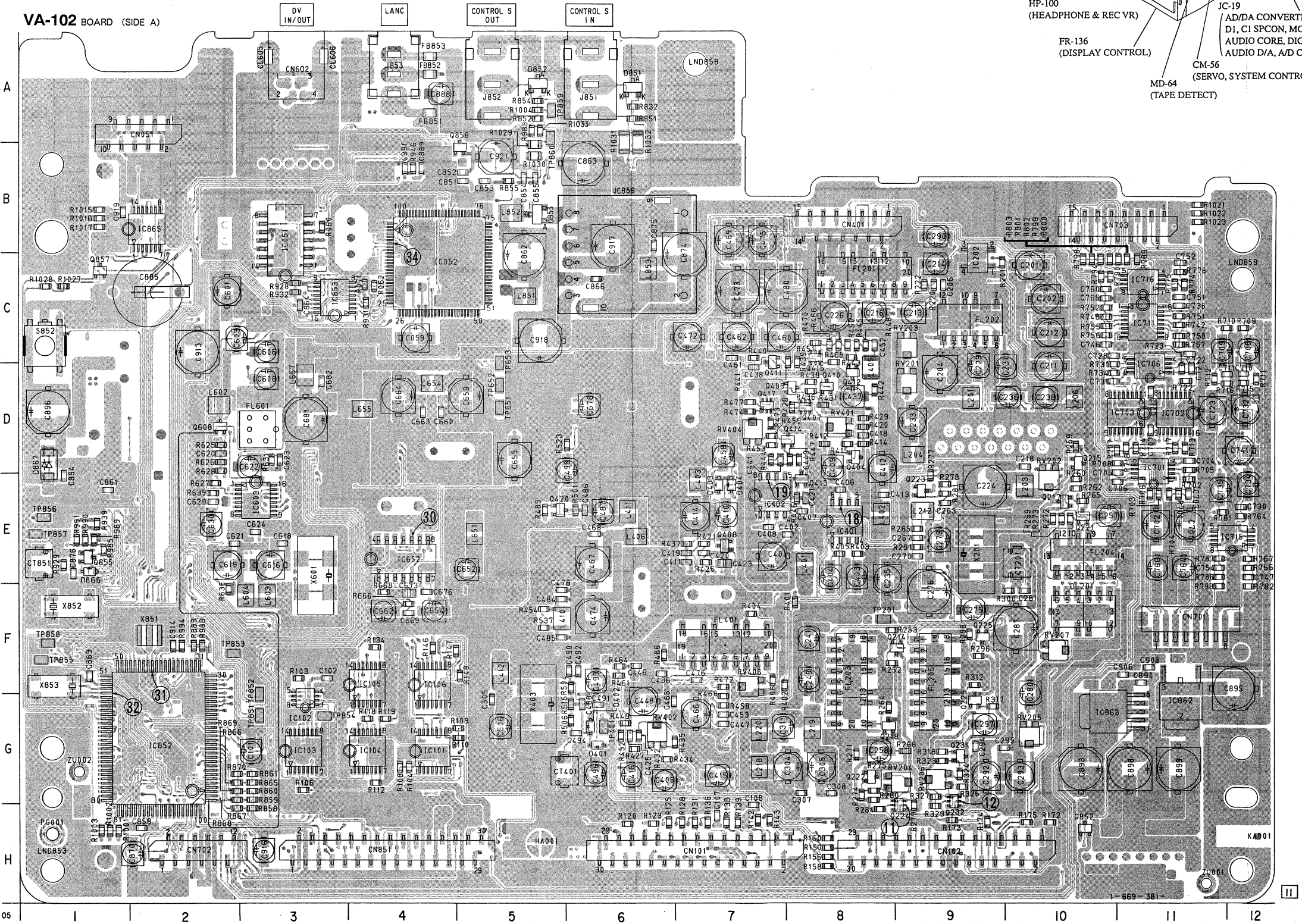
02 BOARD (SIDE A)

51 A-2
01 H-7
02 H-9
01 B-8
02 A-3
01 F-11
02 H-2
03 B-11
51 H-4

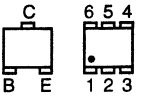
1 G-6
3 E-7
4 E-7
1 A-6
2 A-5
3 B-5
3 E-1
7 D-1

11 B-3
2 B-4
11 G-4
12 G-3
13 G-3
14 G-4
15 G-4
16 G-4
12 C-9
11 E-8
12 E-7
11 E-4
12 D-11
13 D-11
16 D-11
1 C-11
5 E-12
6 C-11
12 G-2
13 C-3
16 B-6
12 G-11
13 G-10
15 B-2

4 F-9
5 D-10
7 D-10
8 G-8
1 E-10
2 G-8
3 E-9
4 H-9
5 F-9
9 G-9
11 G-9
12 G-9
4 D-8
17 D-8
16 E-7
19 D-8
10 D-8
1 C-7
2 D-8
3 E-8
4 D-8
5 C-8
7 D-7
10 E-5
12 H-10
15 E-1
16 B-4
17 C-1



- For Printed Wiring Board.
- This board is six-layer print board. layers 2 to 5 have not been include
- There are few cases that the part is printed on this diagram.
- Chip transistor



VA-10:



-
- A diagram of a 2x2 grid. The top-left cell is labeled 'C' above it. The bottom-left cell is labeled 'B' below it. The bottom-right cell is labeled 'E' below it. The top-right cell is labeled '6', '5', and '4' above it, and '1', '2', and '3' below it. A small black dot is located in the bottom-left cell.

VA-102 (1F) SCHEMATIC DIAGRAM

Ref. No. : VA-102 board: 1,000 Series

VA-102 BOARD (1/8)

no mark: REC/PB mode
XX mark: NO MOUNT

CL101	R113	30	B.UP_SV
CL102	R114	29	XHI_RST
CL103	R115	28	MO_XPFAIL
		27	MO_XWAKEUP(inc)
CL105	R117	26	HI_SCK
CL106	R120	25	HI_S0(DATA TO HI)
CL107	R121	24	HI_S1(DATA FROM HI)
CL108	R122	23	XCS_MO
		22	GND
CL109	R123	21	MO_RST
CL110	R124	20	MO_SCK
CL111	R125	19	MO_S0
CL112	R126	18	MO_S1
CL113	R128	17	XCS_UVIC
CL114	R130	16	UVIC_BUSY
CL115	R131	15	UVIC_SWIN
CL116	R132	14	UVIC_GATE
		13	GND
CL117	R136	12	OSD_S0
CL118	R137	11	OSD_SCK
CL119	R138	10	XCS_OSD2
CL120	R139	9	OSD2_ON
		8	GND
CL121	R139	7	S/XY
CL122	R140	6	PB/XEE
CL123	R141	5	A_MON.1
CL124	R142	4	A_MON.2
CL125	R143	3	A_XUP
CL126	R144	2	JOG_FIL_ON
CL127	R145	1	RSV_2

CL101 30P
CN101 1010 30P

CL128	R156	30	LALT
CL129	R157	29	BLK
CL130	R158	28	BF
CL131	R159	27	N.C.

VA-102 Board(1)
(SEE PAGE 4)

VA-102 Board(1)
(SEE PAGE 4)

VA-102 Board(1/8)
(SEE PAGE 4-74, 75)

VA-102 Board(1/8)
(SEE PAGE 4-68)

VA-102 Board(1/8)
(SEE PAGE 4-71)

VA-102 Board(1/8)
(SEE PAGE 4-56)

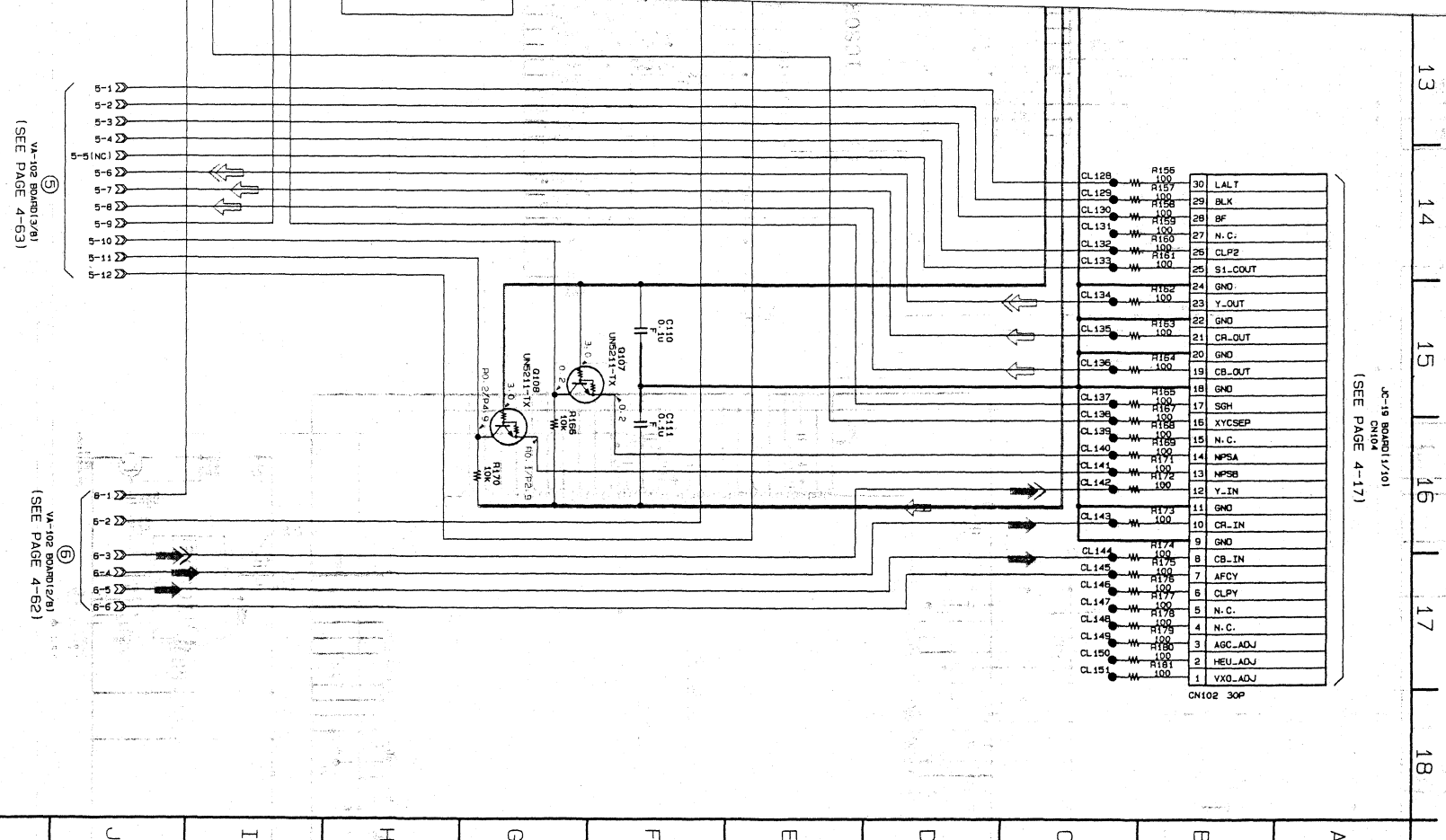
Base of primary board and (1/8) inch of metal.

MAINBOARD CHASSIS (1/8) inch of metal.

Base of metal board (1/8) inch of metal.

10S105-1120

DSR-20/20P



• Signal path

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→	→	→
PB	→	→	→

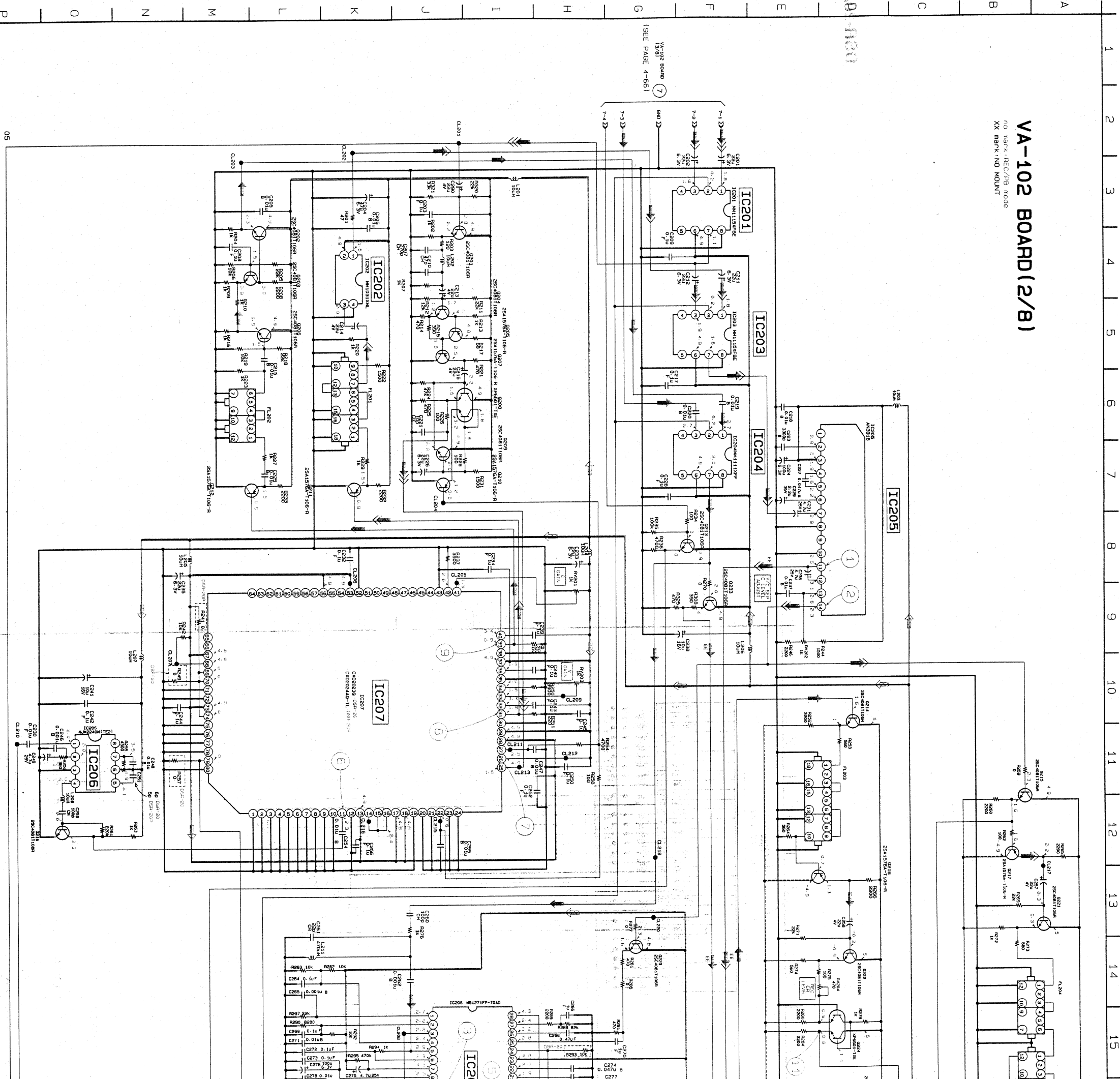
VA-102 (VIDEO IN) SCHEMATIC DIAGRAM

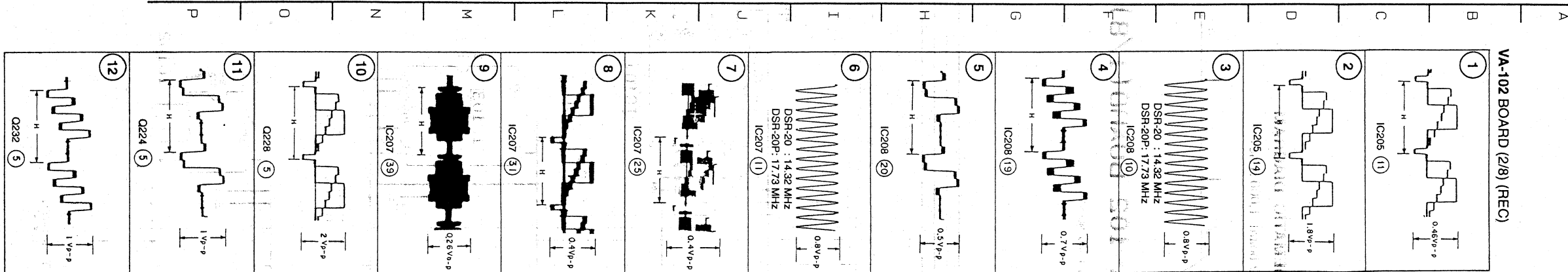
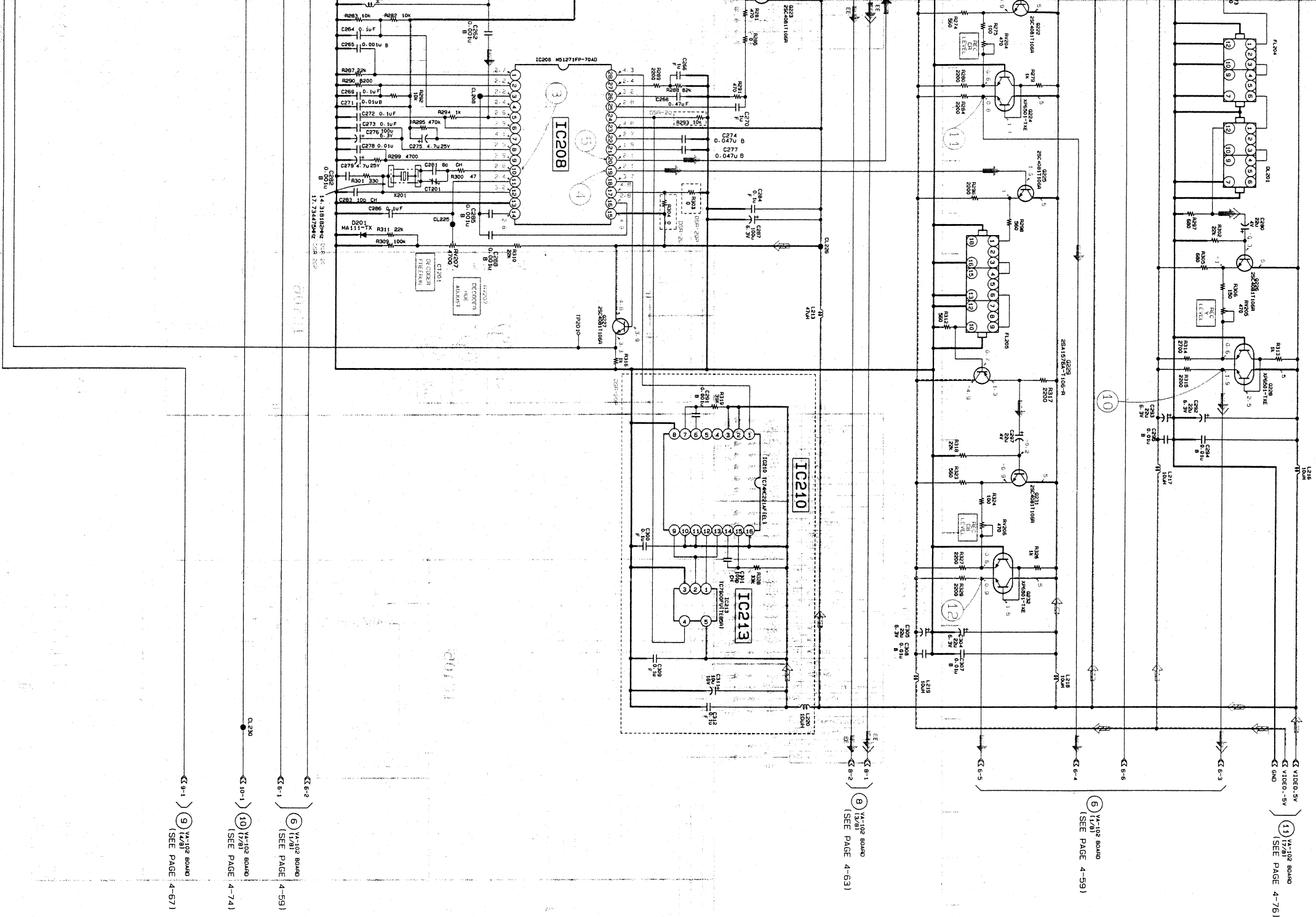
• Refer to page 4-53 for Printed Wiring Board.

— Ref. No.: VA-102 board; 1,000 series —

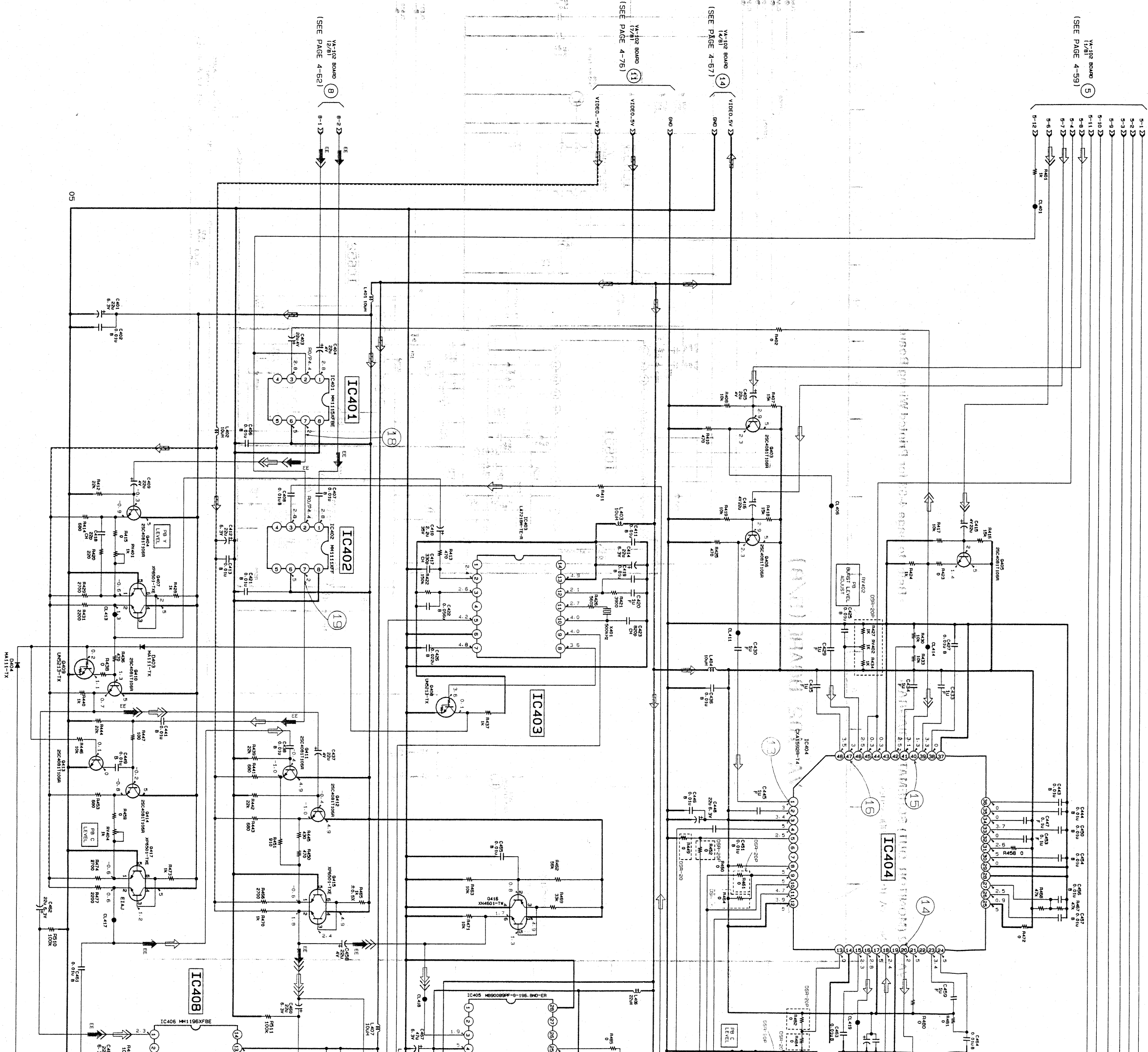
VA-102 BOARD (2/8)

no mark REC/PB mode
XX mark NO MOUNT

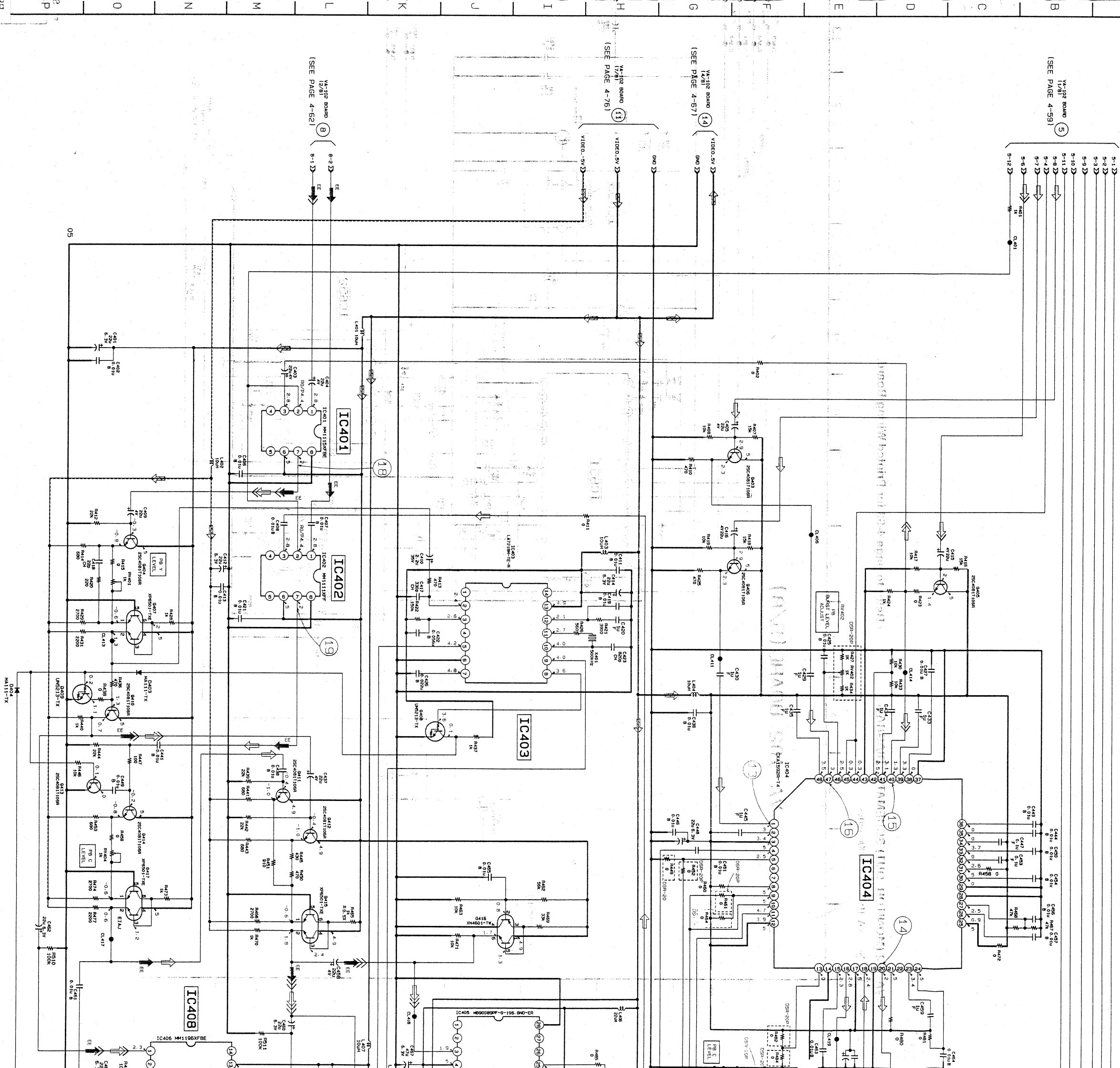


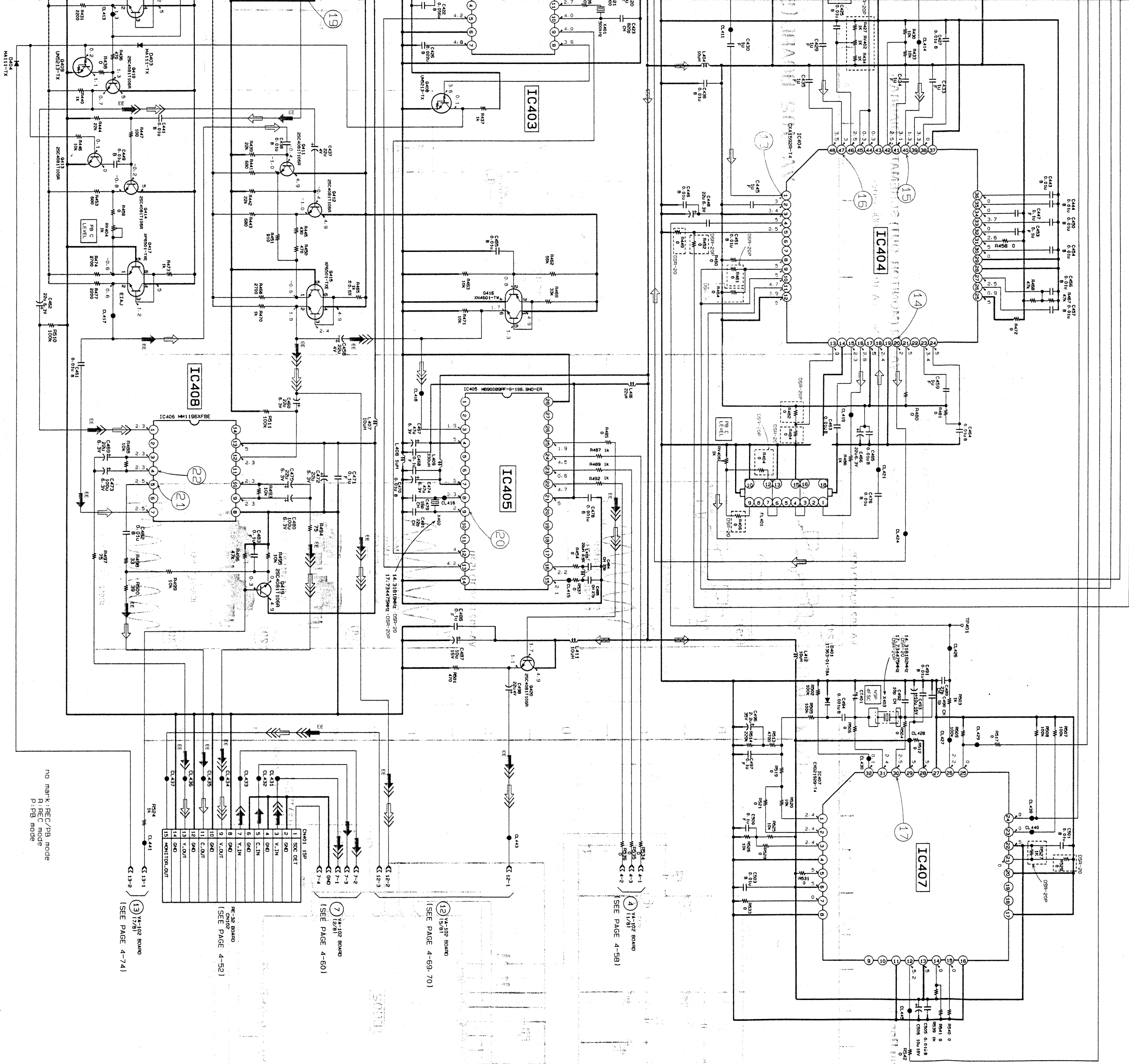


VA-102 BOARD (3/8)



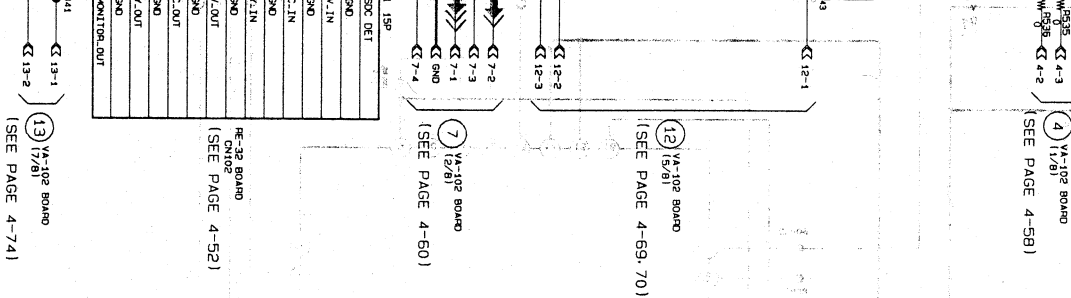
VA-102 BOARD (3/8)





10 11 12 13 14 15 16 17 18 19 20 21 22 23





4-66

DSR-20/20P

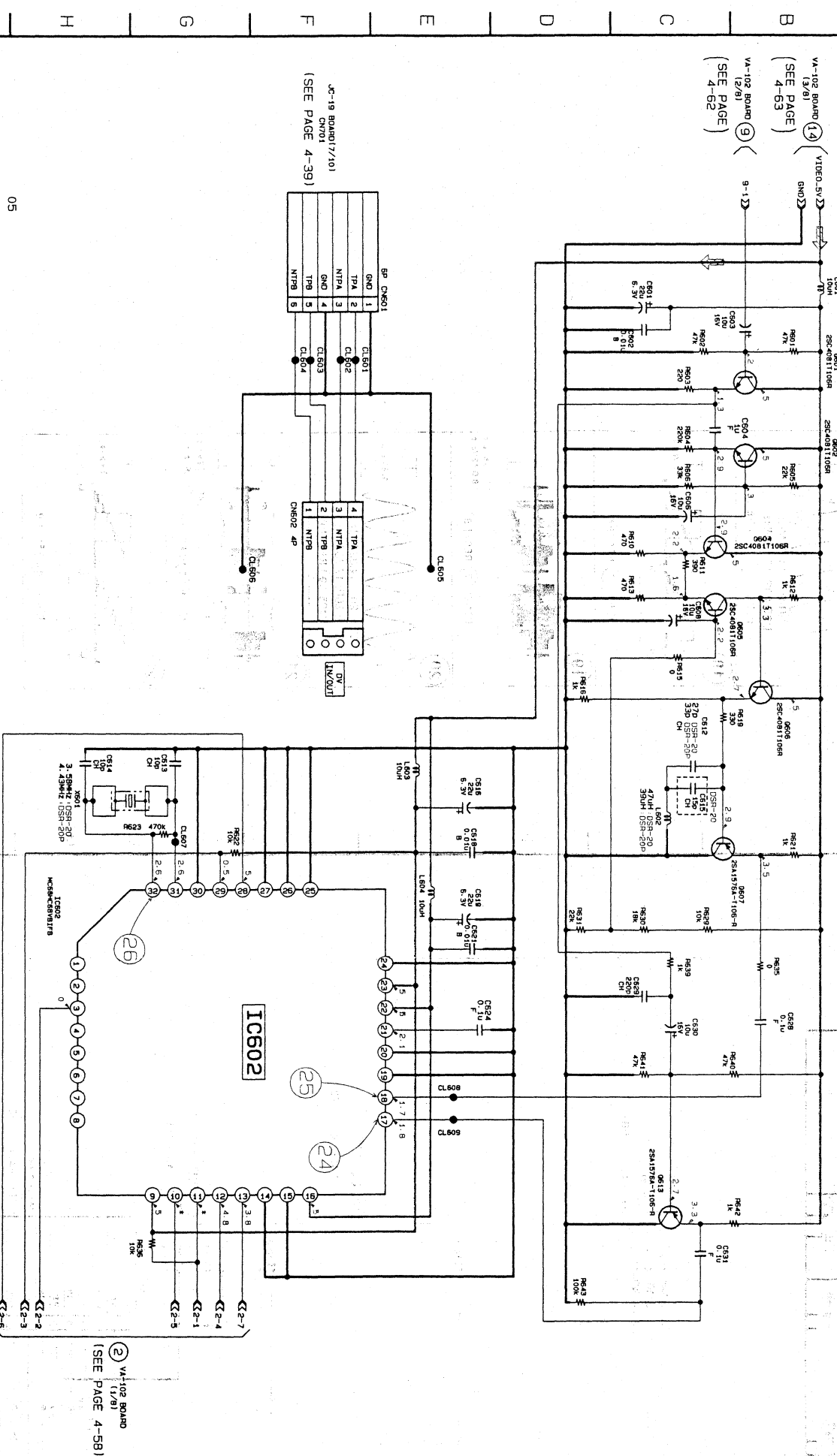
VA-102 (UVIC & DV IN/OUT) SCHEMATIC DIAGRAM

— Ref. No. : VA-102 board; 1,000 series —

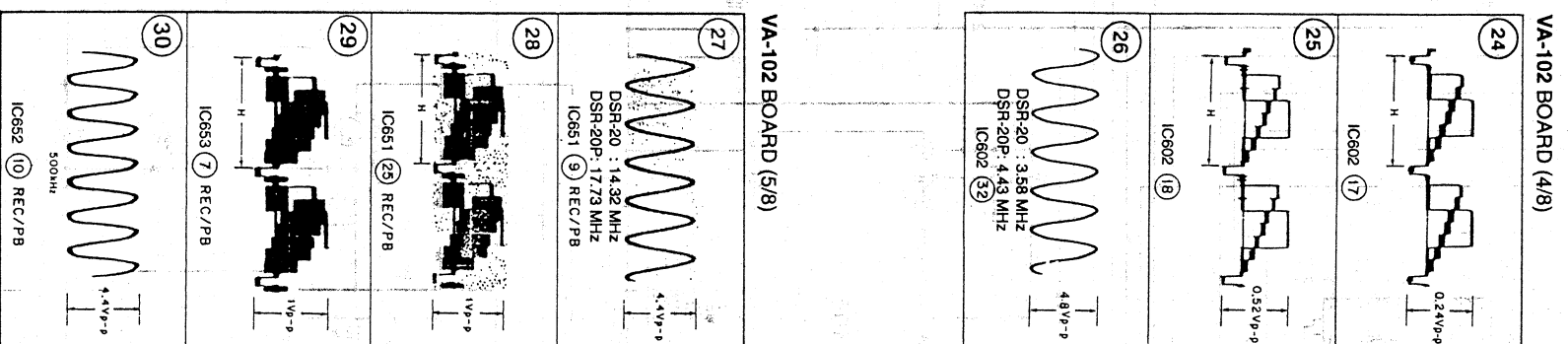
• Refer to page 4-53 for Printed Wiring Board.

VA-102 BOARD (4/8)

NO MARK: REC/PB MODE



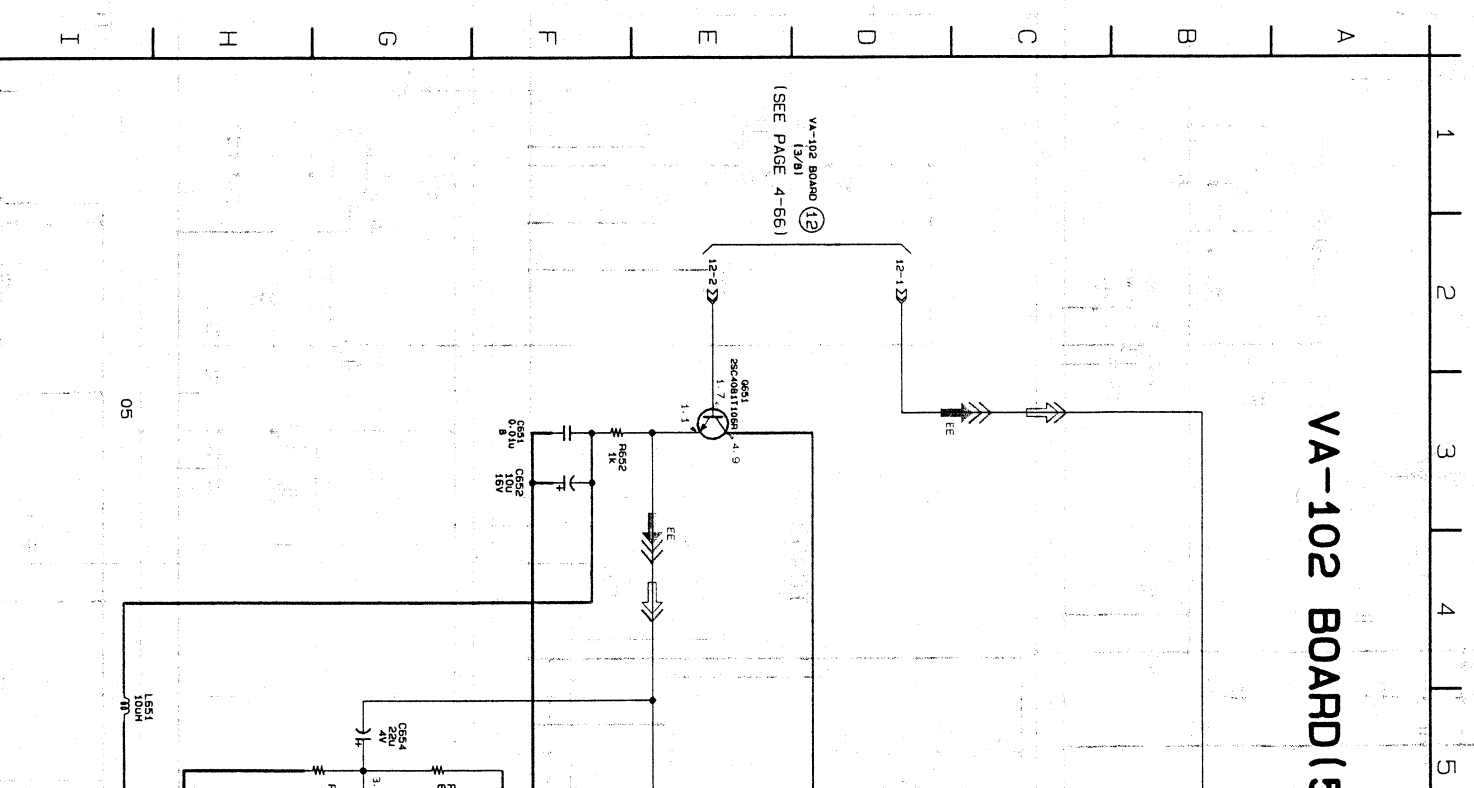
05



Board.

VA-102 (MONITOR OUT) SCHEMATIC DIAGRAM

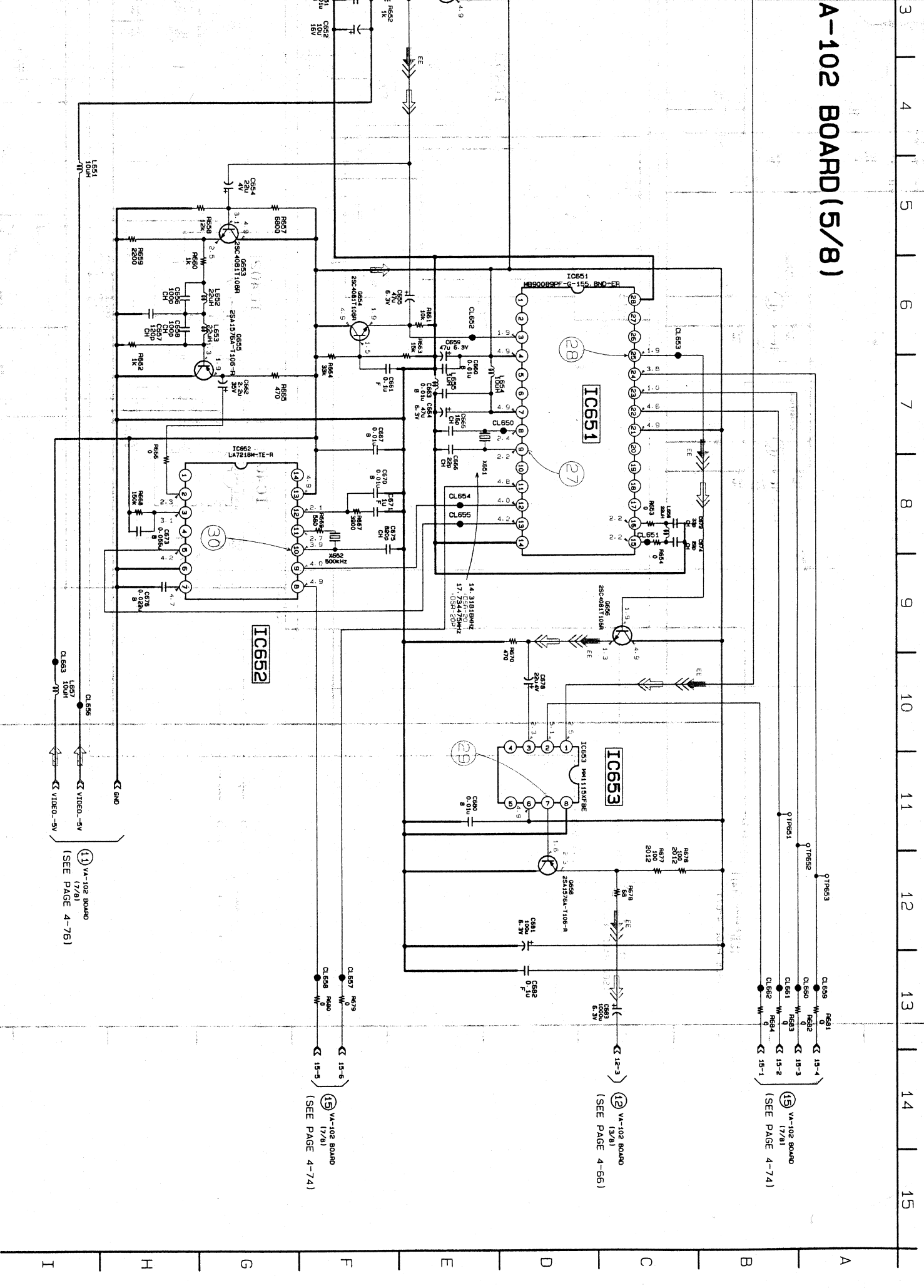
—Ref. No. : VA-102 board; 1,000 series —





[illegible]

ATIC DIAGRAM

- Refer to page 4-53 for Printed Wiring Board.



● **Signal path**

VIDEO SIGNAL		
	CHROMA	Y/CHROMA
REC		
PB		

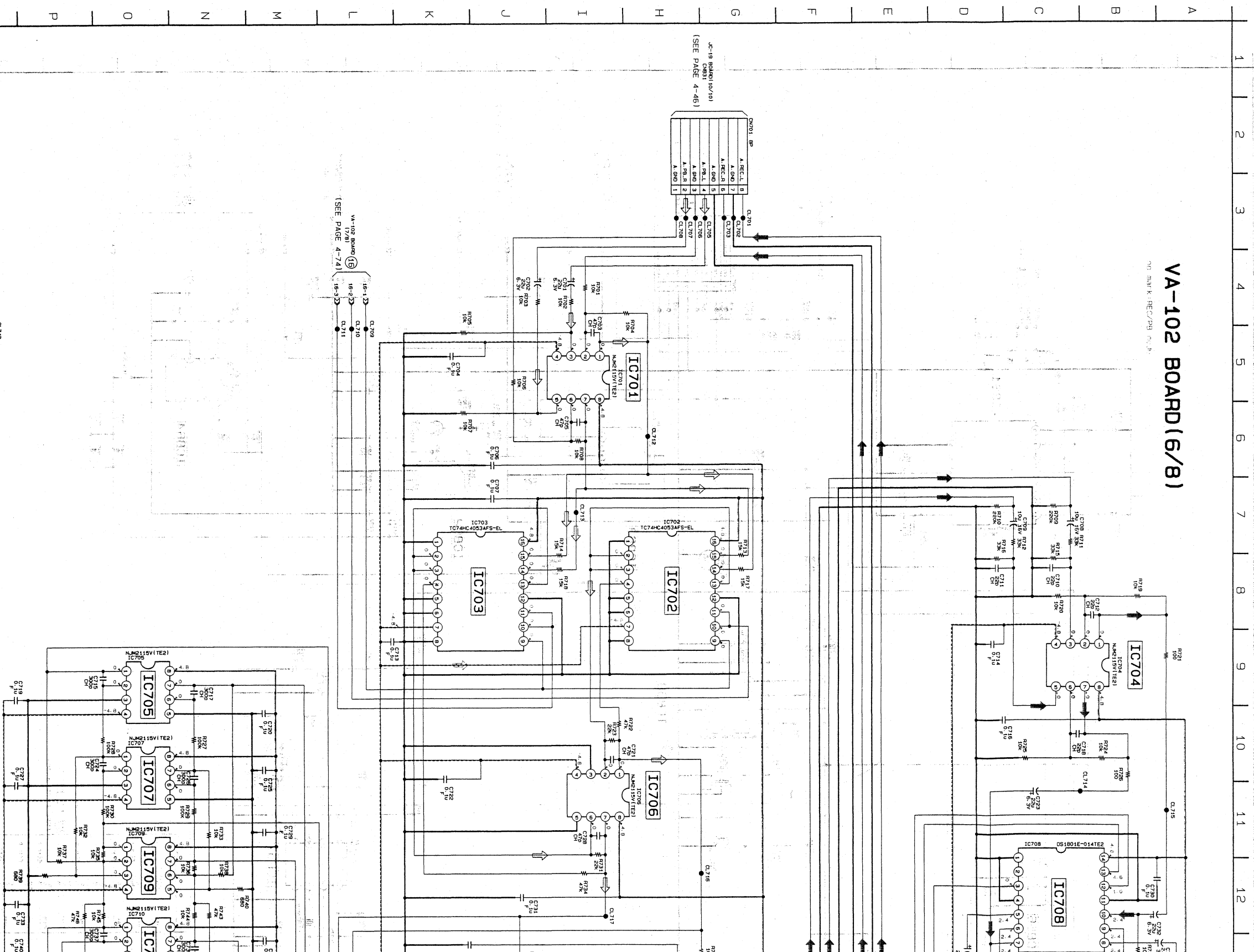
VA-102 (AUDIO) SCHEMATIC DIAGRAM

— Ref. No. : VA-102 board, 1,000 series —

• Refer to page 4-53 for Printed Wiring Board.

VA-102 BOARD (6/8)

70 MARK REC/PB 1000



Signal path

AUDIO SIGNAL

REC

PB

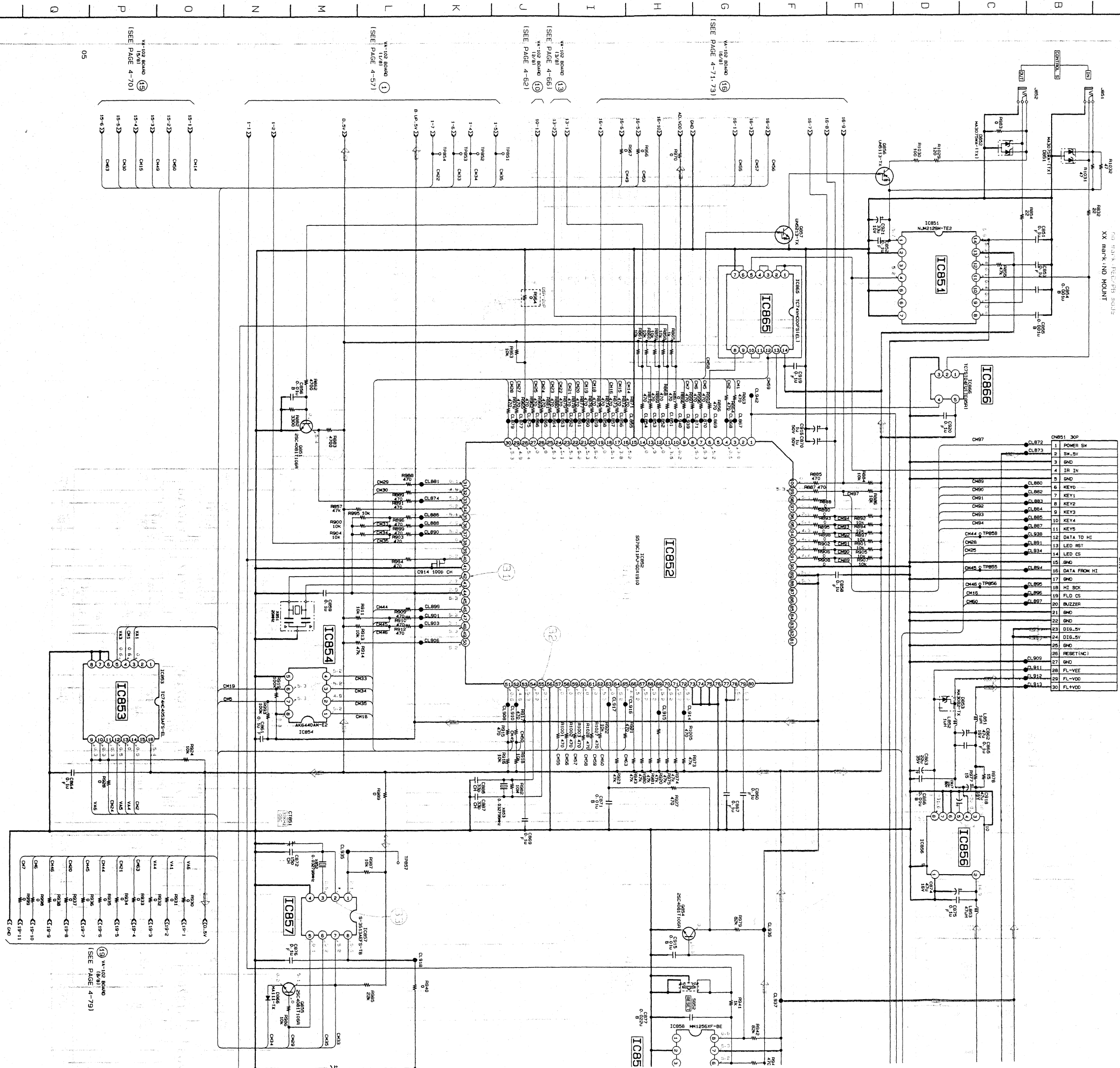


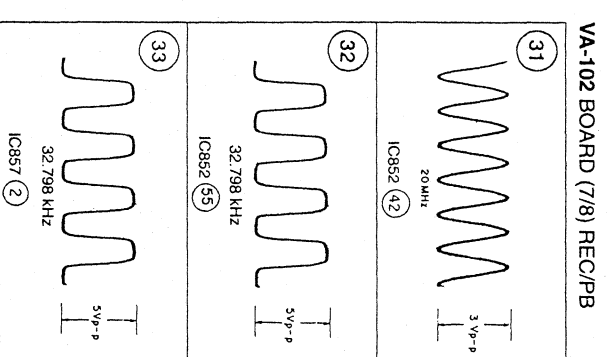
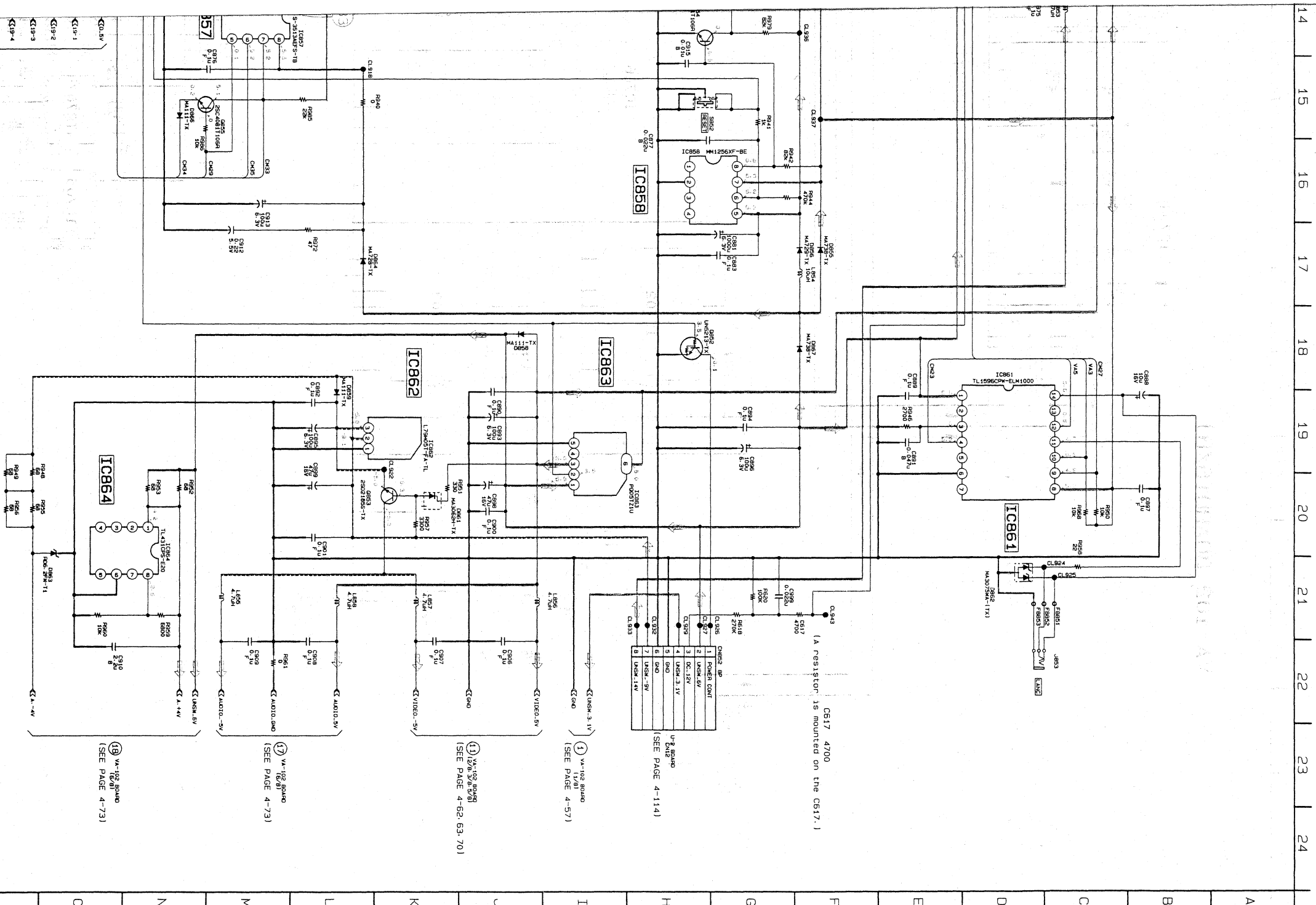
VA-102 (HI MICOM) SCHEMATIC DIAGRAM

• Refer to page 4-53 for Printed Wiring Board.

— Ref. No. : VA-102 board, 1,000 series —

VA-102 BOARD (7/8)





— Ref. No. : RS-78 board; 6,000 series —

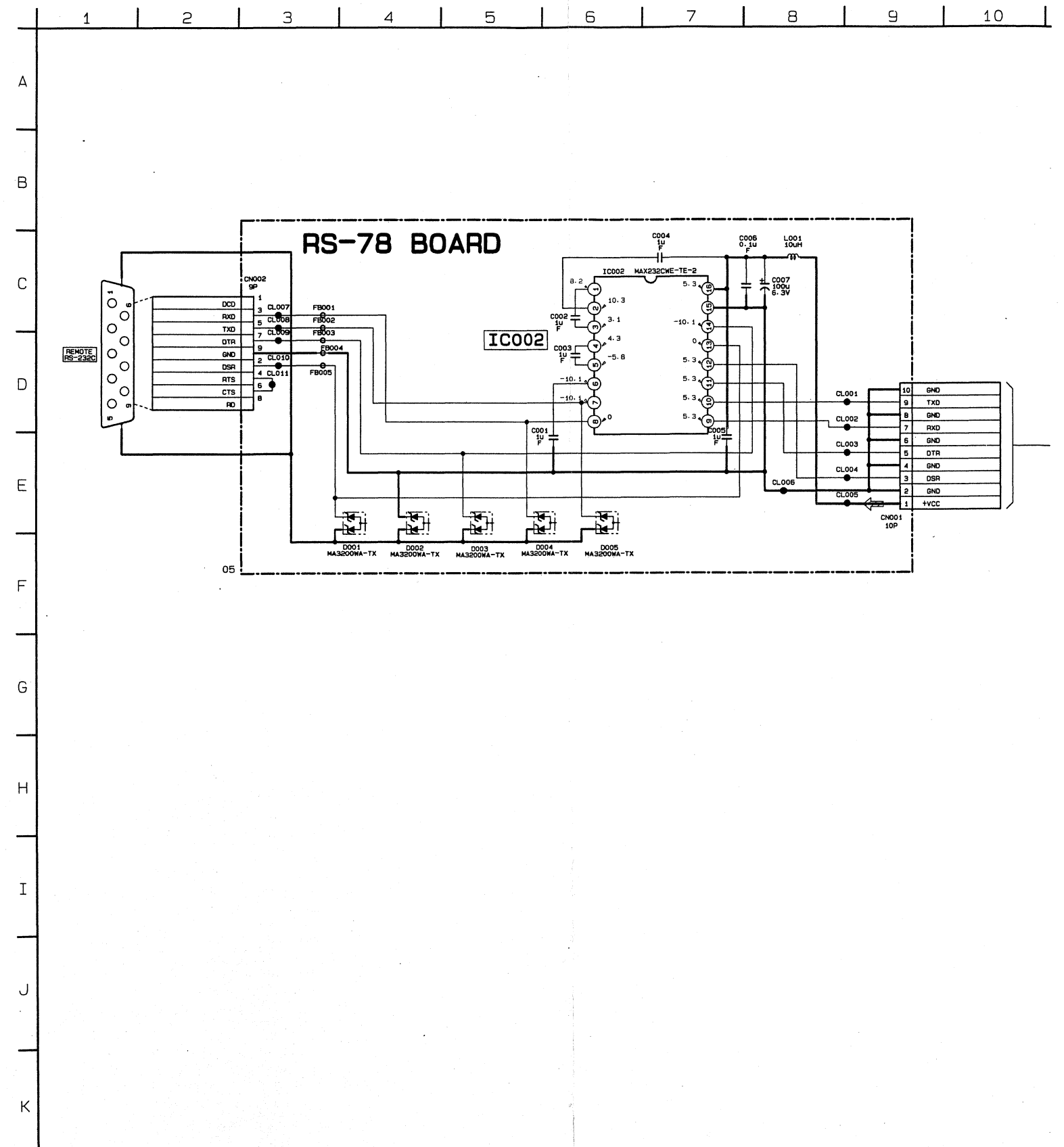
- **For Printed Wiring Board.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.

05

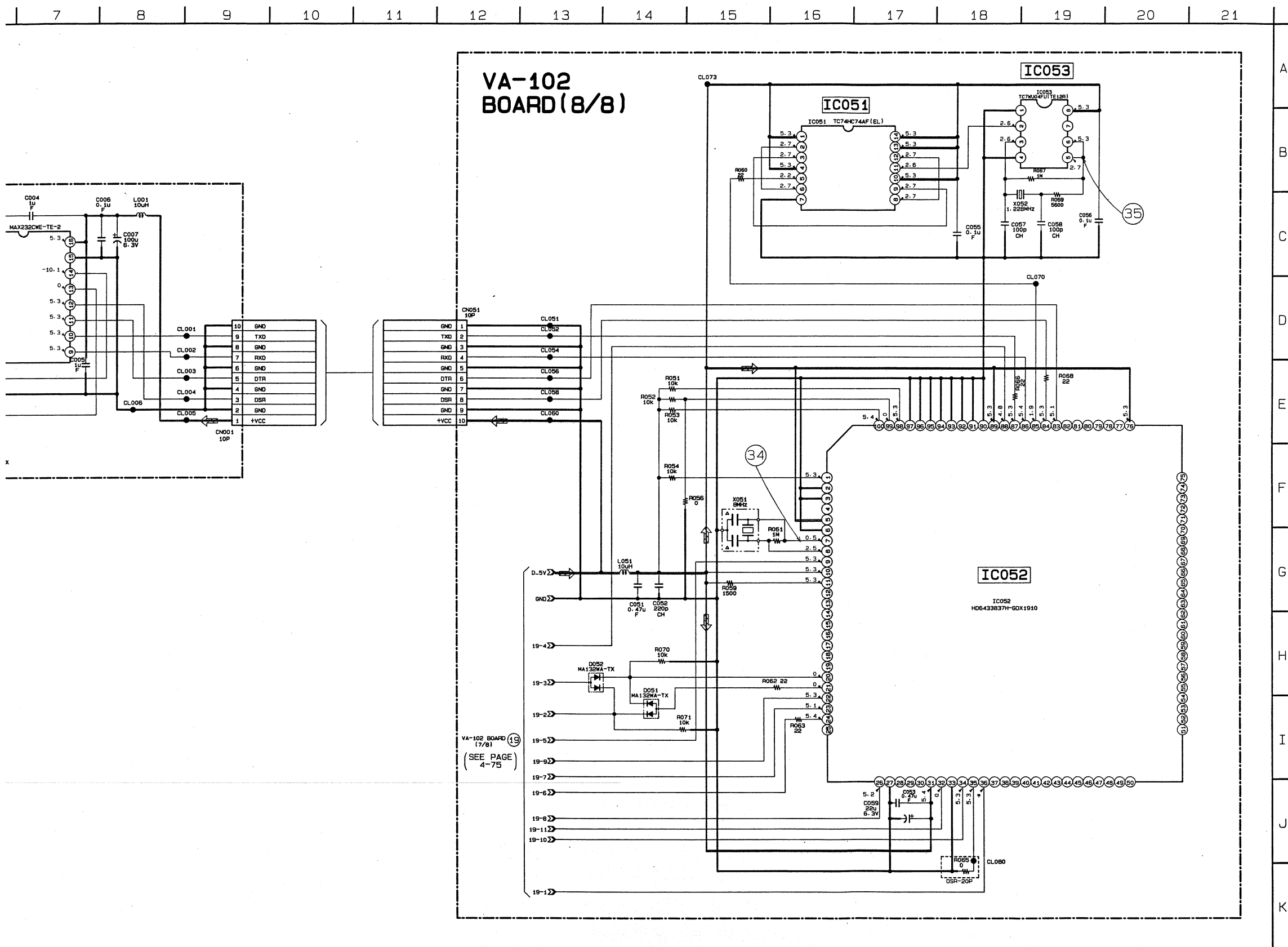
05

— Ref. No. : RS-78 board; 6,000 / VA-102 board; 1,000 series —

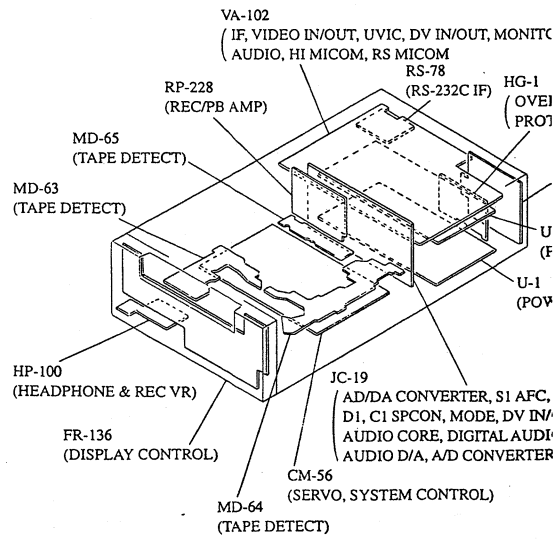
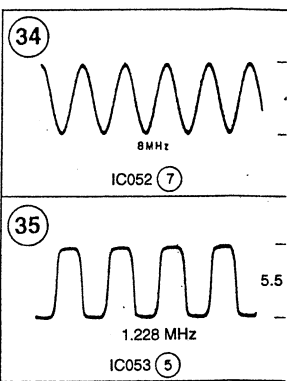
- Refer to page 4-53 for VA-102 Printed Wiring

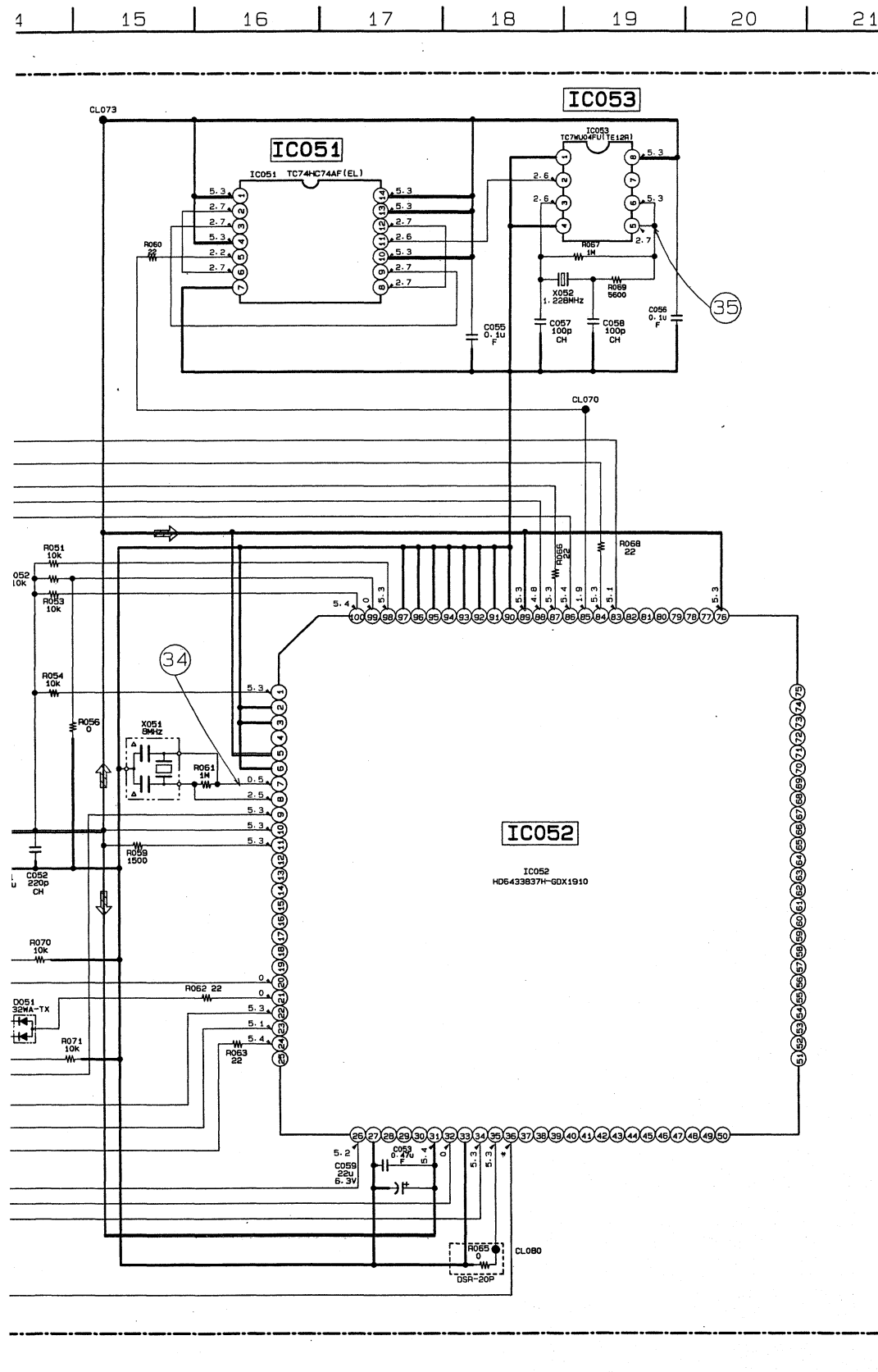


• Refer to page 4-53 for VA-102 Printed Wiring Board.

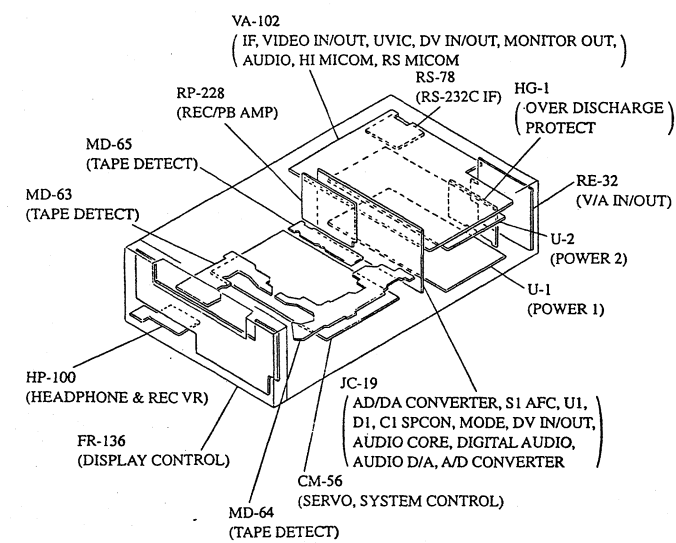
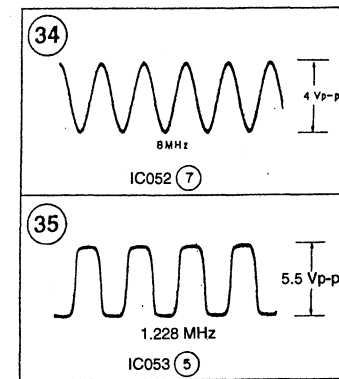


VA-102 BOARD (8/8) REC/PB



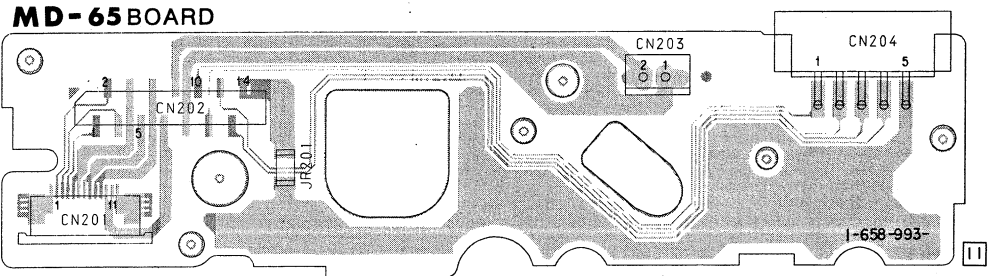


VA-102 BOARD (8/8) REC/PB

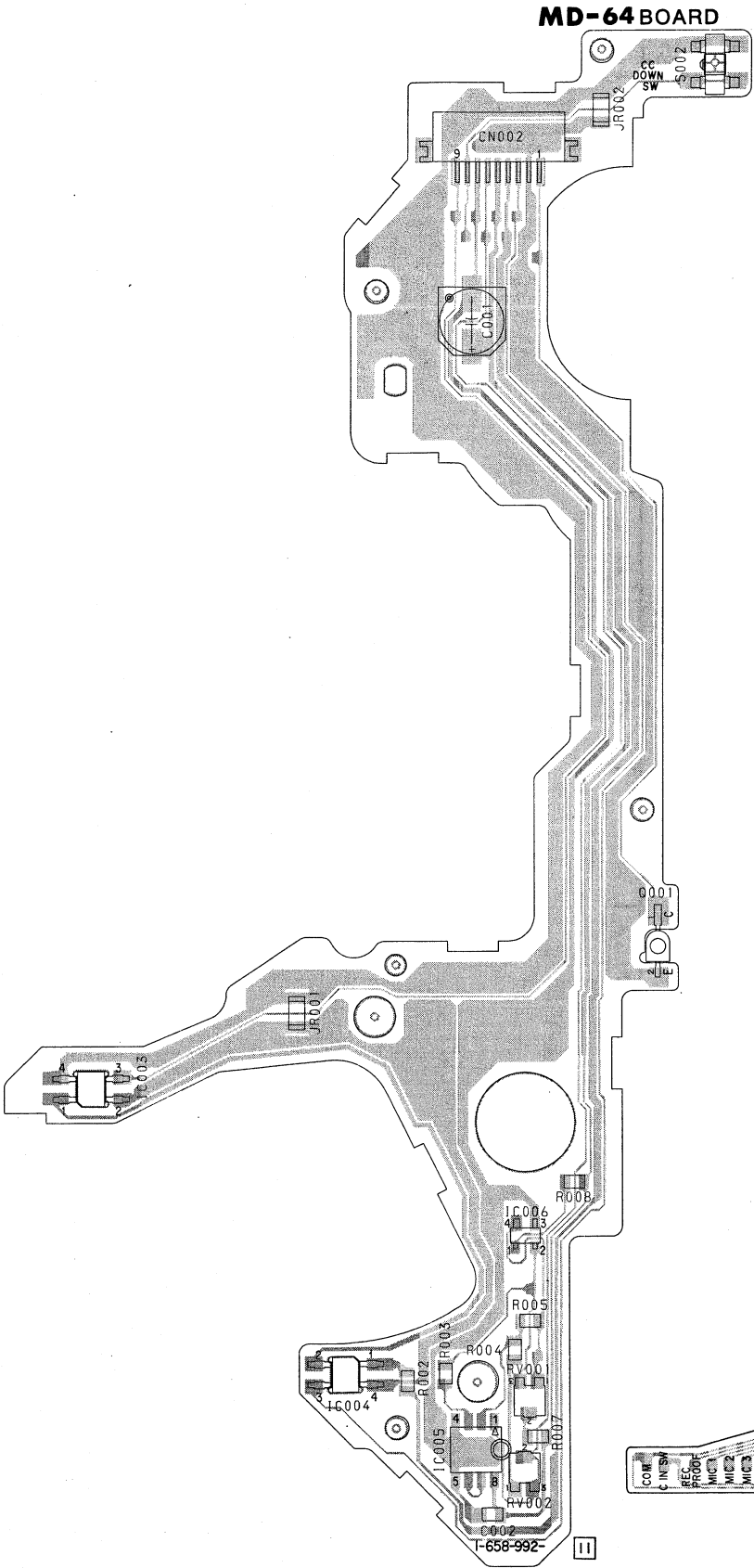


MD-63, MD-64, MD-65 (TAPE DETECT), FP-406 (TAPE SENSOR) PRINTED WIRING BOARDS
— Ref. No. : MD-63 board; 6,000 / MD-64 board; 7,000 / MD-65 board; 5,000/FP-406 board; 5,000 series —

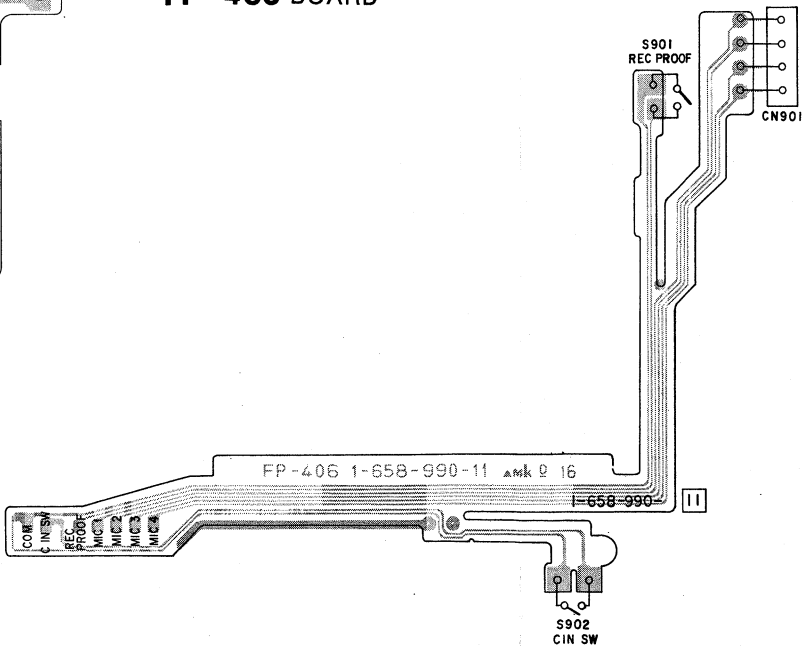
MD-65 BOARD



MD-64 BOARD



FP-406 BOARD



MD-63
— Ref.

A

B

C

D

T
C
C
(
4

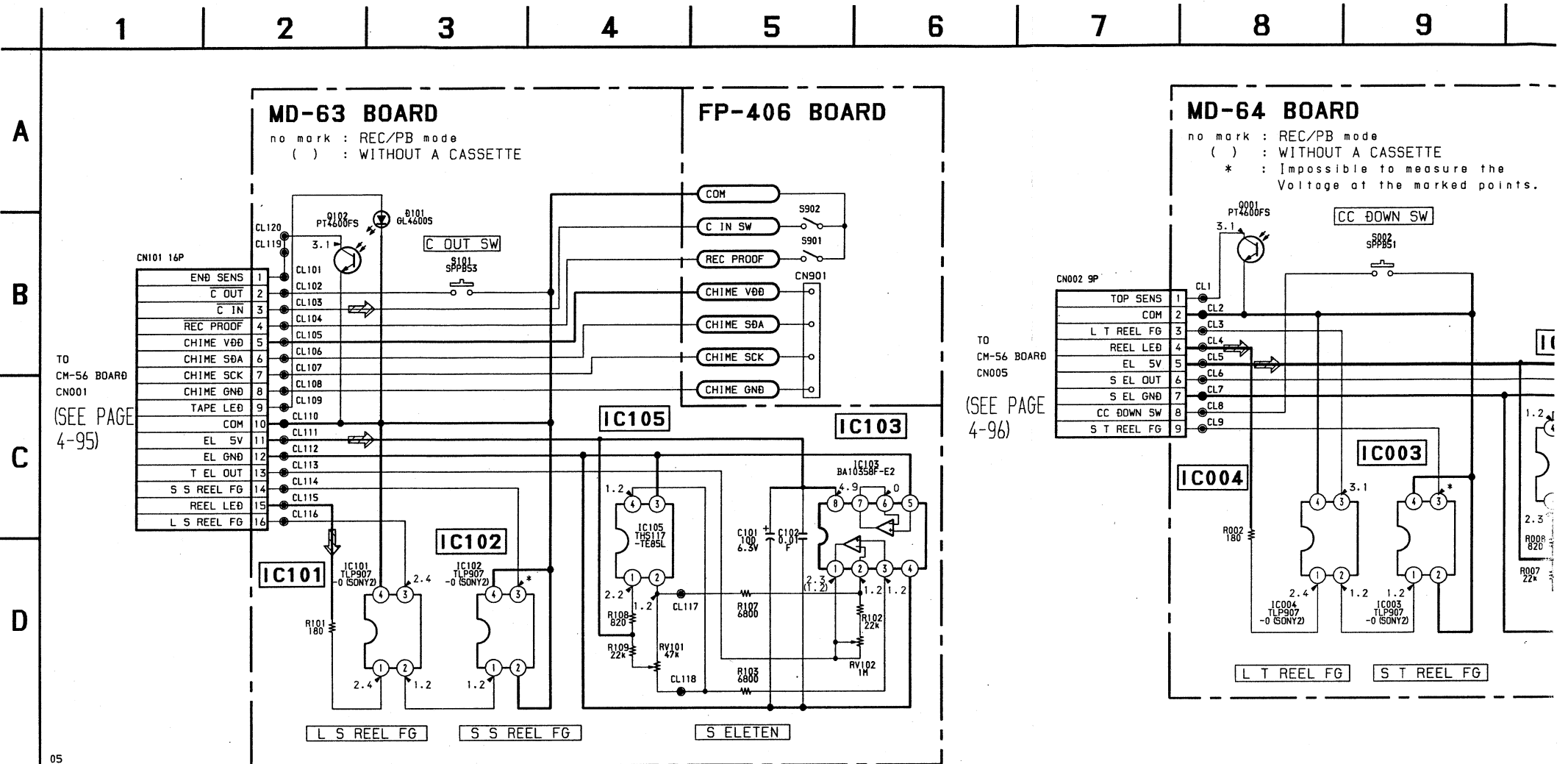
05

MD-63
(TAPE I

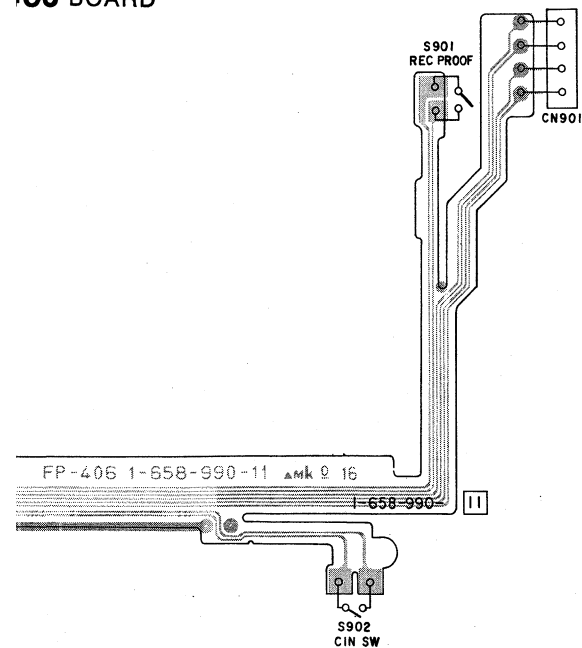
HP-100
(HEAD I

MD-63, MD-64, MD-65 (TAPE DETECT), FP-406 (TAPE SENSOR) SCHEMATIC DIAGRAM

— Ref. No. : MD-63 board; 6,000 / MD-64 board; 7,000 / MD-65 board; 5,000/FP-406 board; 5,000 series —



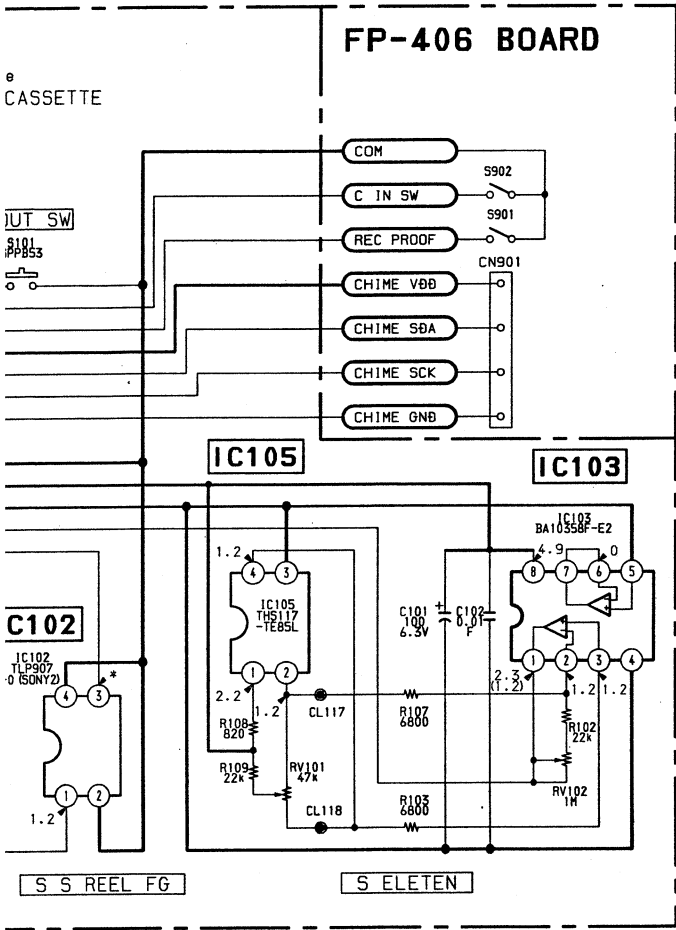
FP-406 BOARD



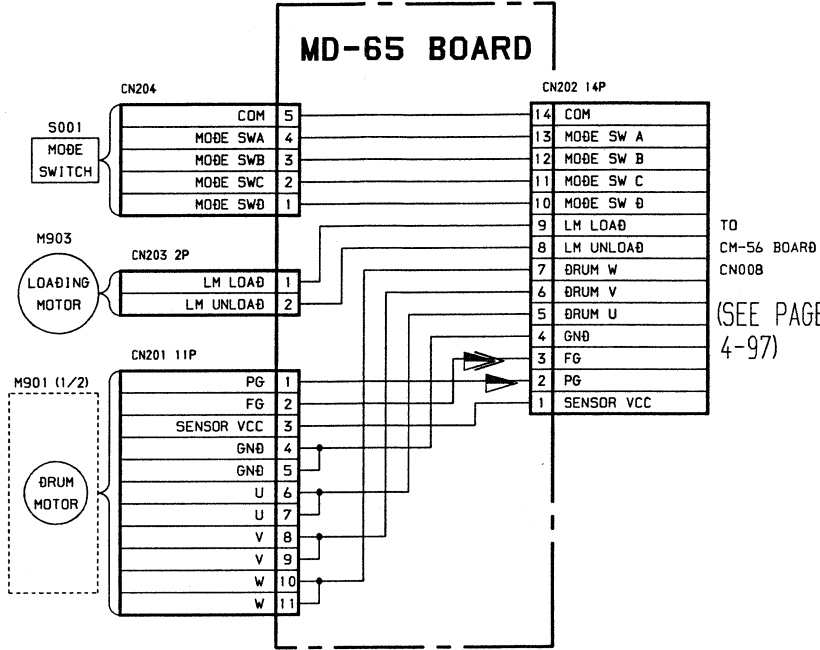
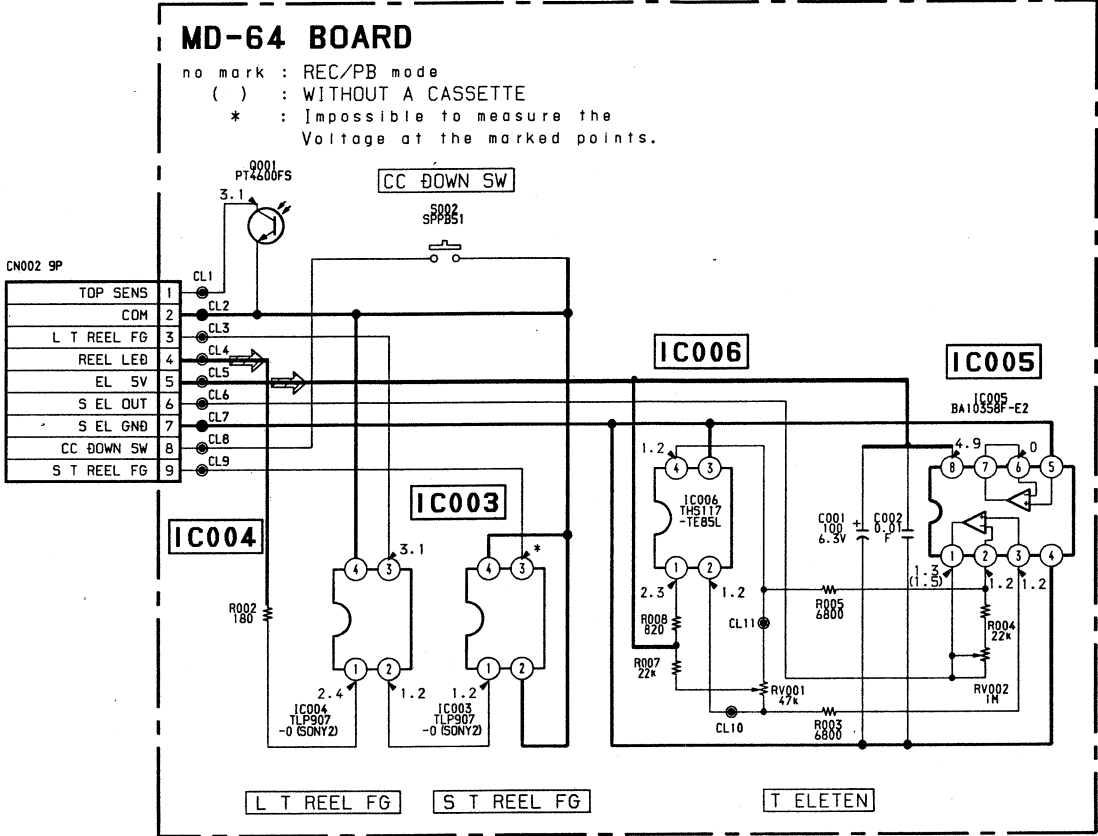
TAPE SENSOR) SCHEMATIC DIAGRAM

-65 board; 5,000/FP-406 board; 5,000 series —

	4	5	6	7	8	9	10	11	12	13	14	15
--	---	---	---	---	---	---	----	----	----	----	----	----



TO
CM-56 BOARD
CN005
(SEE PAGE
4-96)



T.)
CHARGE)

32
IN/OUT)

R 2)

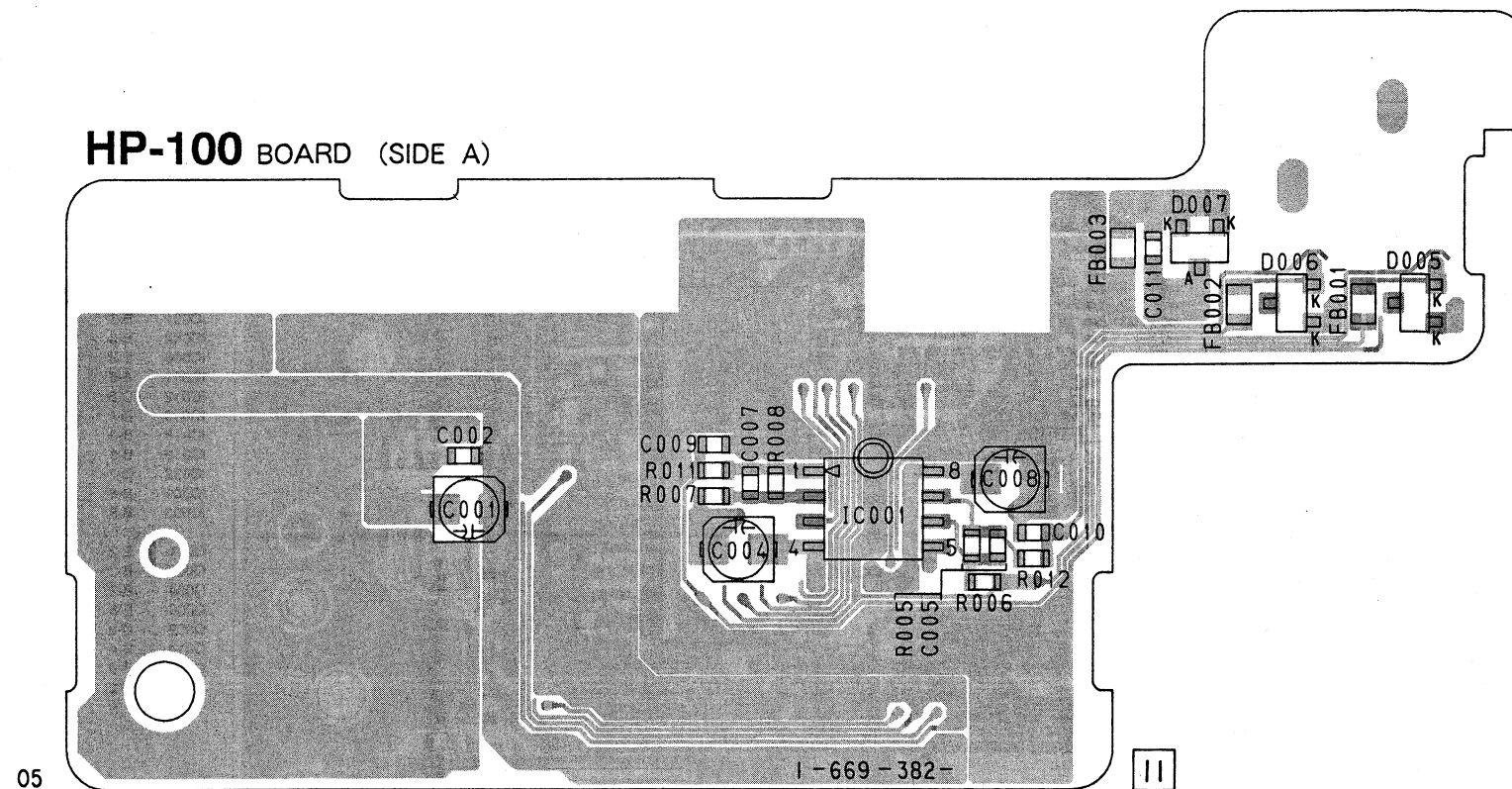
• Signal path

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

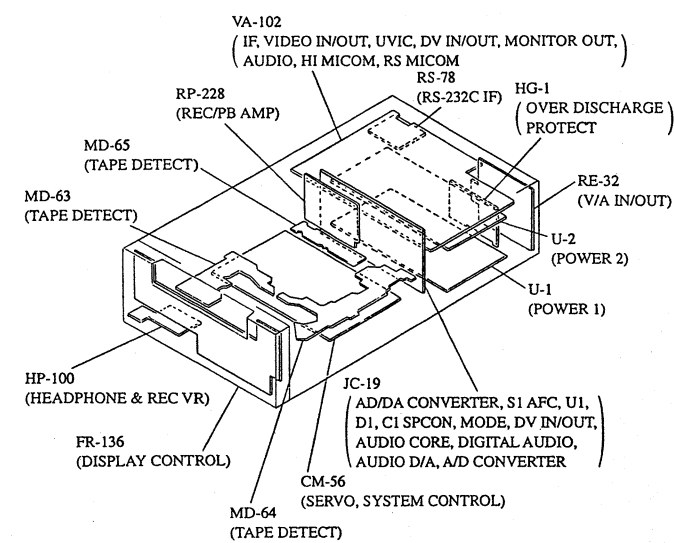
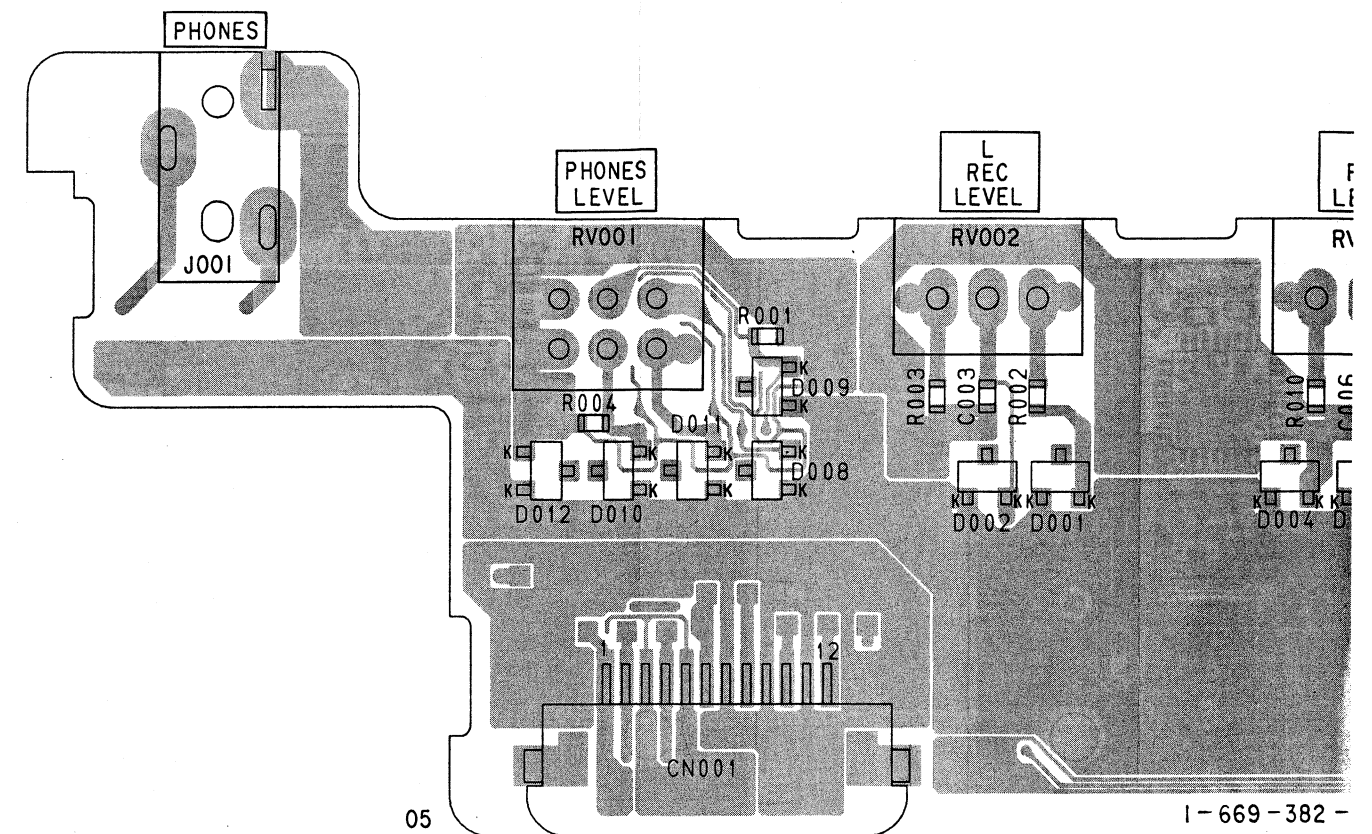
— Ref. No. : HP-100 board; 5,000 series —

- **For Printed Wiring Board.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.

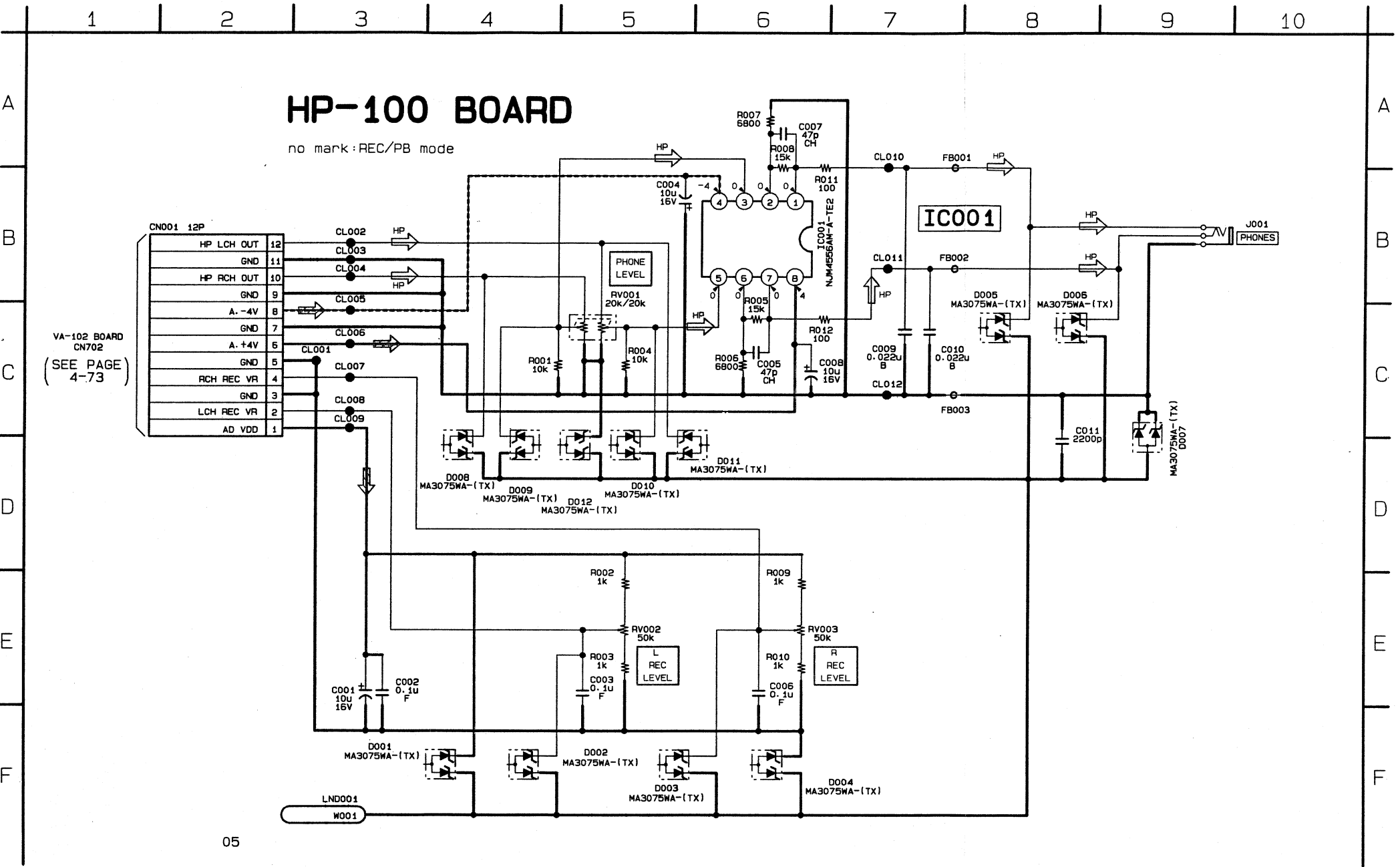
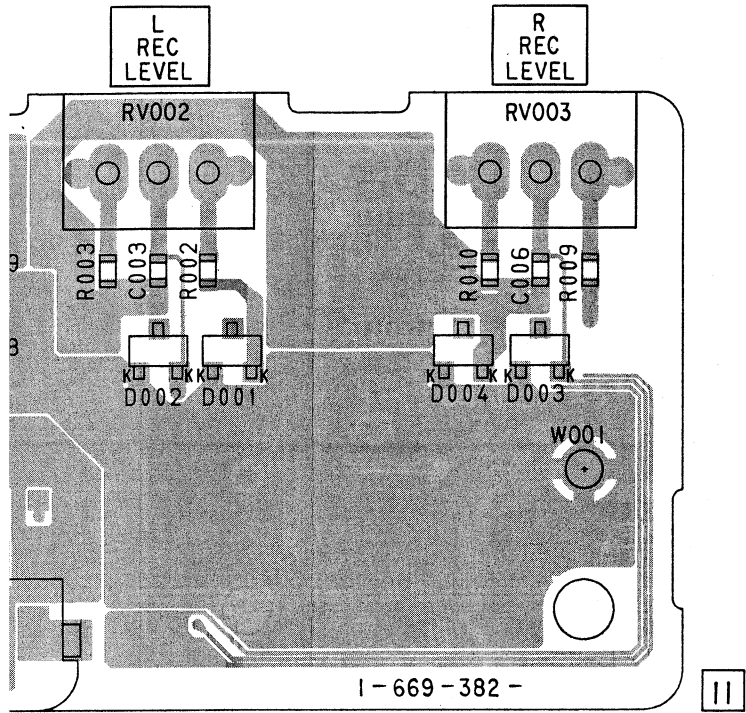
HP-100 BOARD (SIDE A)



HP-100 BOARD (SIDE B)



HP-100 (HEADPHONE & REC VR) SCHEMATIC DIAGRAM
— Ref. No. : HP-100 board; 5,000 series —



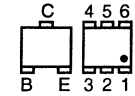
• Signal path

	AUDIO SIGNAL
REC	
PB	⇒

.56 (SERVO, SYSTEM CONTROL) PRINTED WIRING BOARD

ef. No. : CM-56 board; 4,000 series —

- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



CM-56 BOARD (SIDE A)

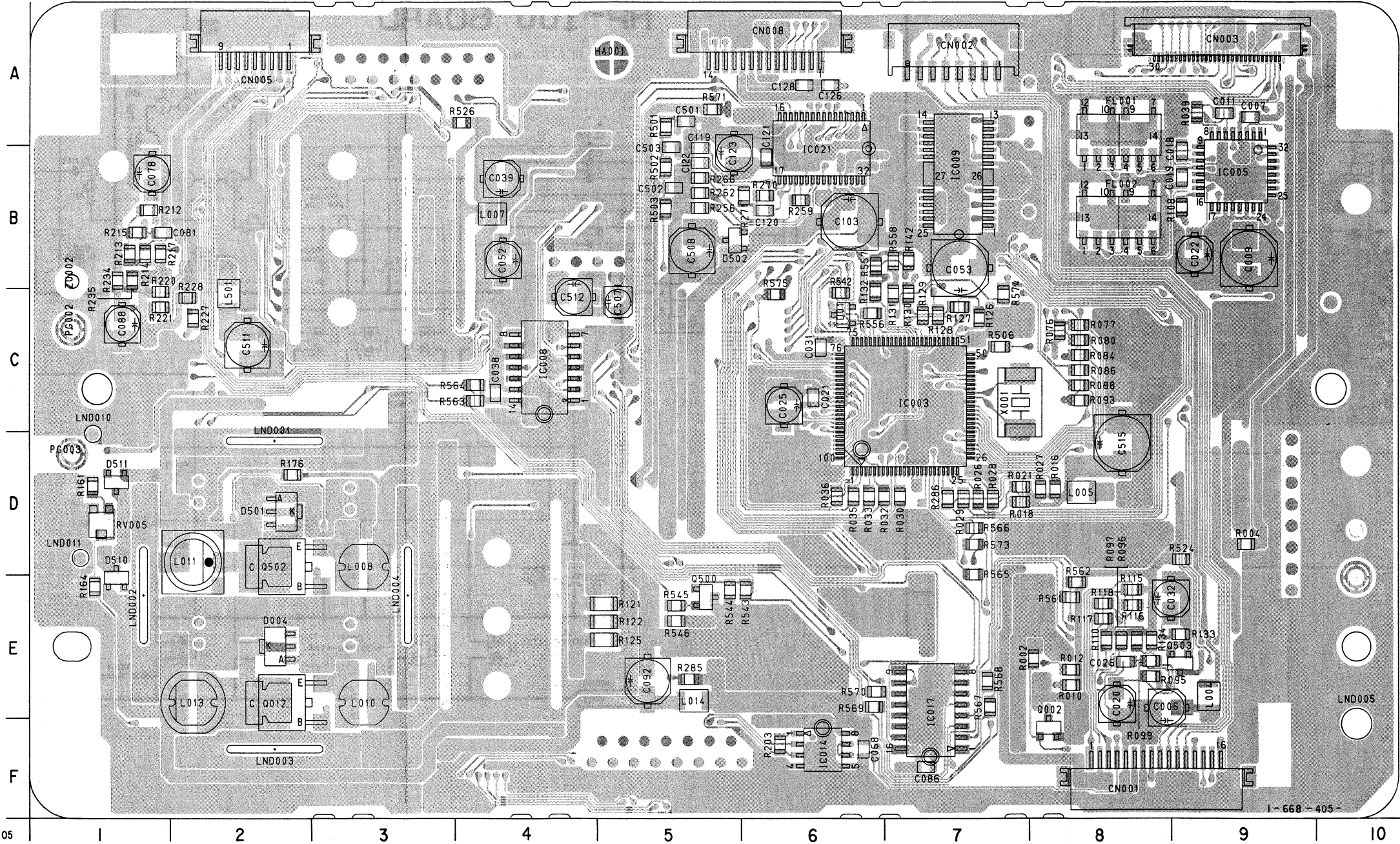
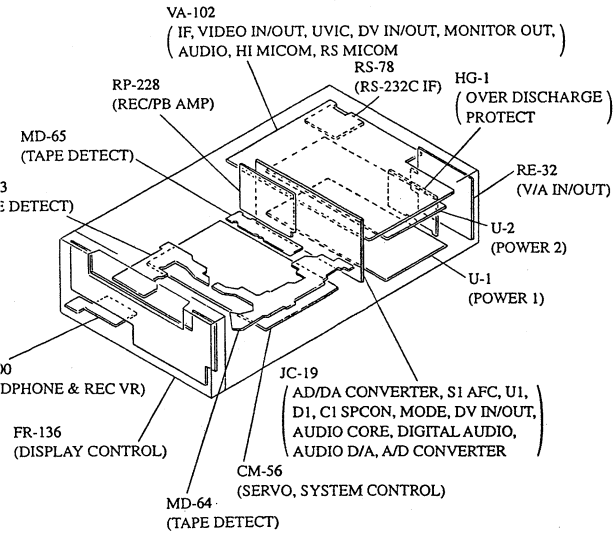
CM-56 BOARD (SIDE A)

CN001 F-8
CN002 A-7
CN003 A-9
CN005 A-2
CN008 A-6

D004 E-2
D011 C-6
D501 D-2
D502 B-5

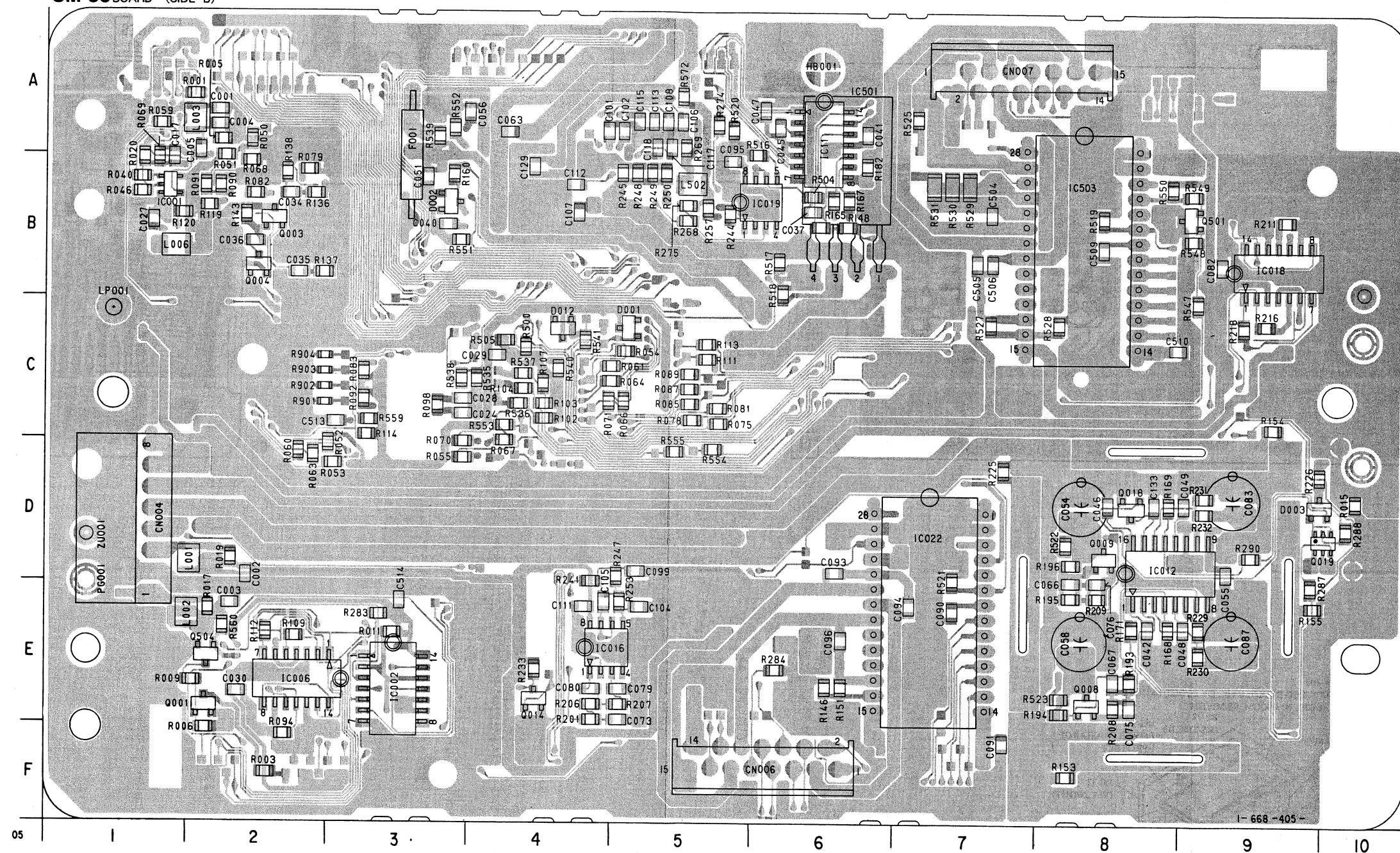
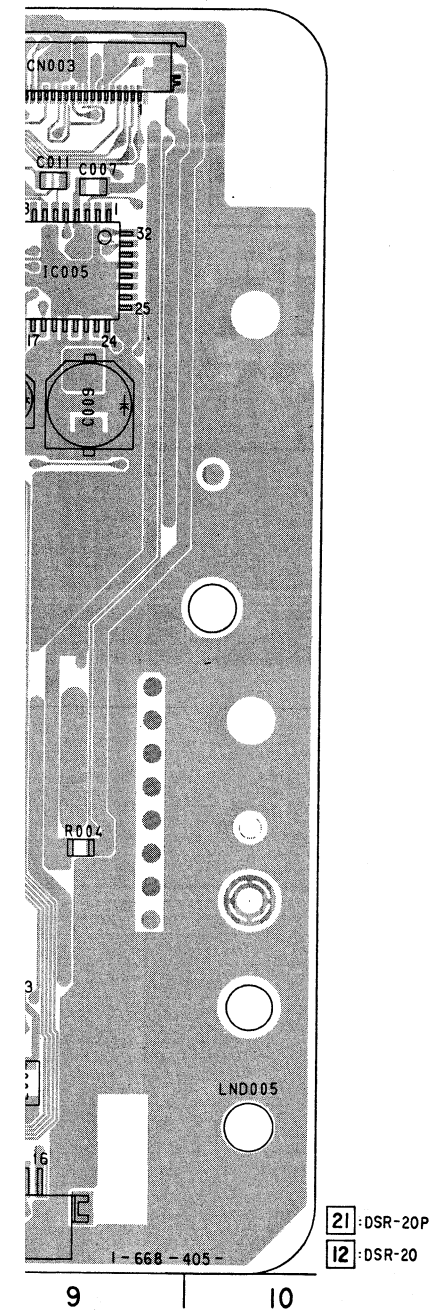
IC003 C-7
IC005 B-9
IC008 C-4
IC009 B-7
IC014 F-6
IC017 F-7
IC021 A-6

Q002 F-8
Q012 E-2
Q500 E-5
Q502 D-2
Q503 E-9



21 DSR-20P
12 DSR-20

CM-56 BOARD (SIDE B)



CM-56 BOARD
(SIDE B)

CN004 D-1
CN006 F-5
CN007 A-7

D001 C-5
D002 B-3
D012 C-4

IC001 B-1
IC002 E-3
IC006 E-2
IC011 A-6
IC012 D-8
IC016 E-4
IC018 B-9
IC019 B-6
IC022 D-7
IC501 B-6
IC503 B-8

Q001 E-2
Q003 B-2
Q004 B-2
Q008 E-8
Q009 D-8
Q014 E-4
Q501 B-9
Q504 E-2

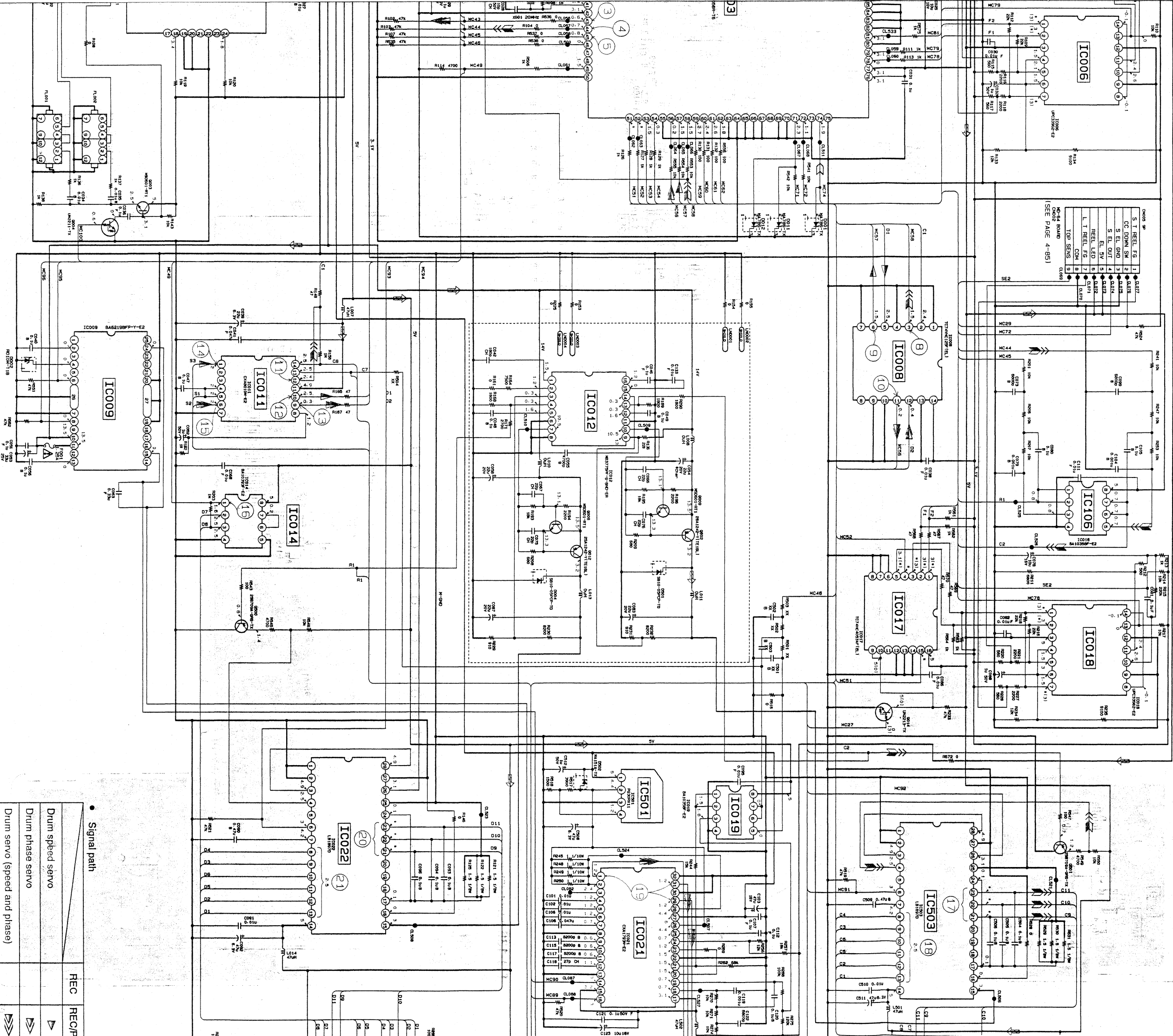
21: DSR-20P
12: DSR-20

A vertical timeline with 14 numbered markers from 1 to 14, arranged vertically from top to bottom. Each number is centered next to a horizontal tick mark on a vertical line.



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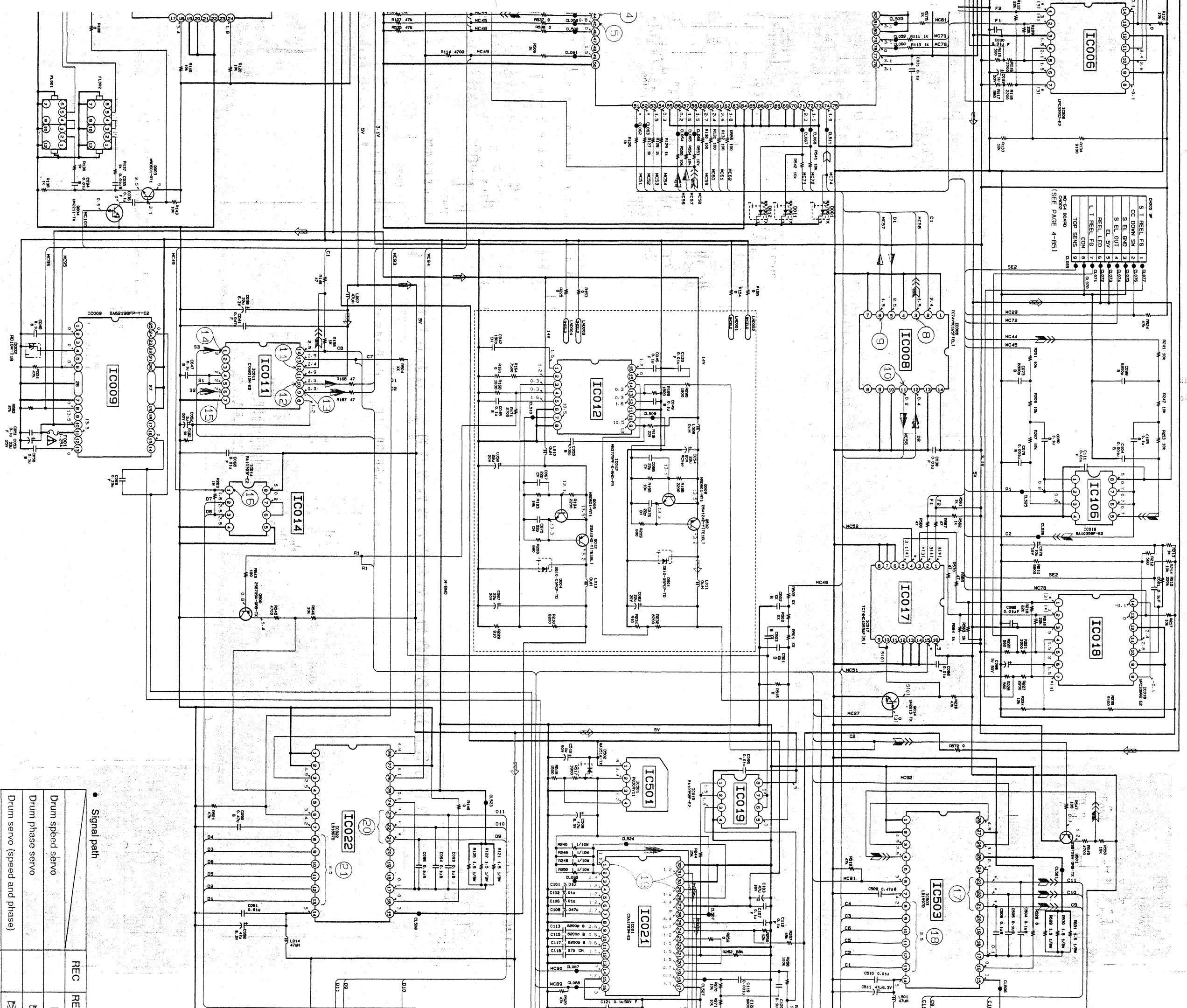
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Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

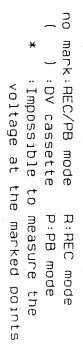
Signal path		REC	REC/PB
Drum speed servo			▷
Drum phase servo			▷
Drum servo (speed and phase)			▷
Capstan speed servo			▷
Capstan phase servo			▷
Capstan servo (speed and phase)			▷
Ref. signal			▷



Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Signal path	REC	REC/PE
Drum speed servo		▷
Drum phase servo		▷
Drum servo (speed and phase)		▷
Capstan speed servo		▷
Capstan phase servo		▷
Capstan servo (speed and phase)		▷
Ref. signal		▷



100-100000

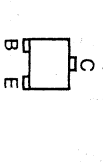


• For Printed Wiring Board

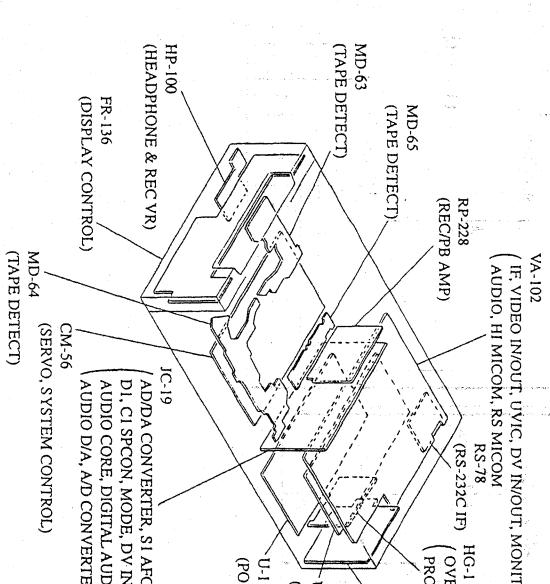
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.

- There are new cases that

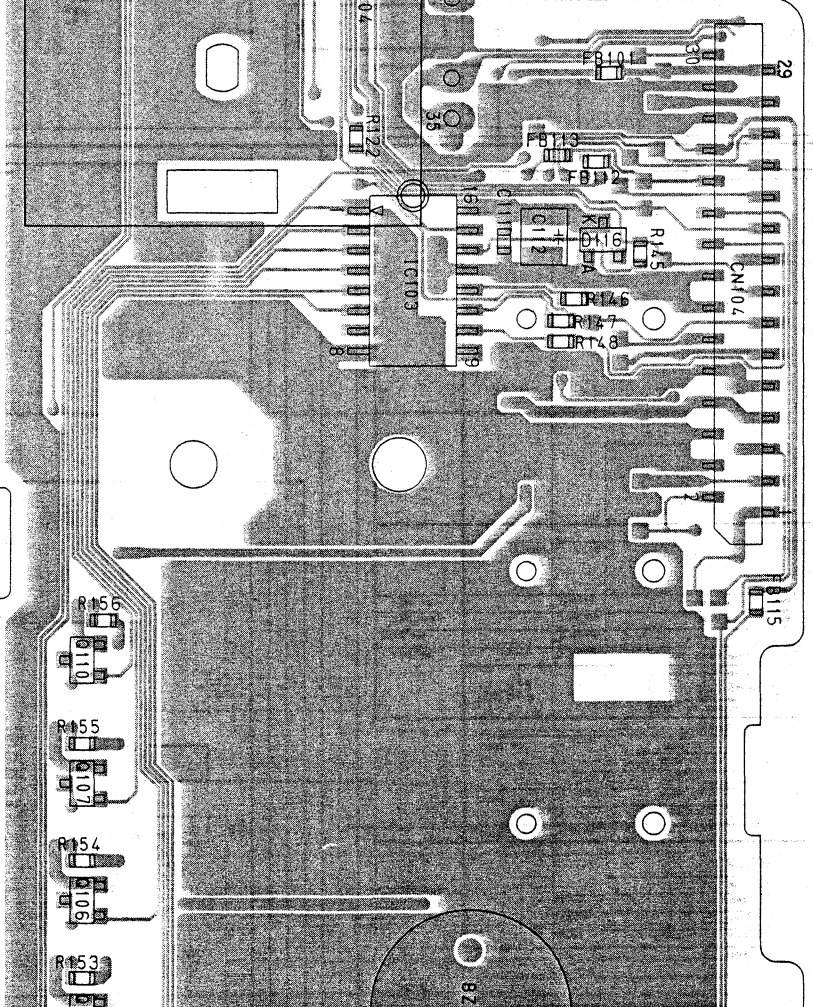
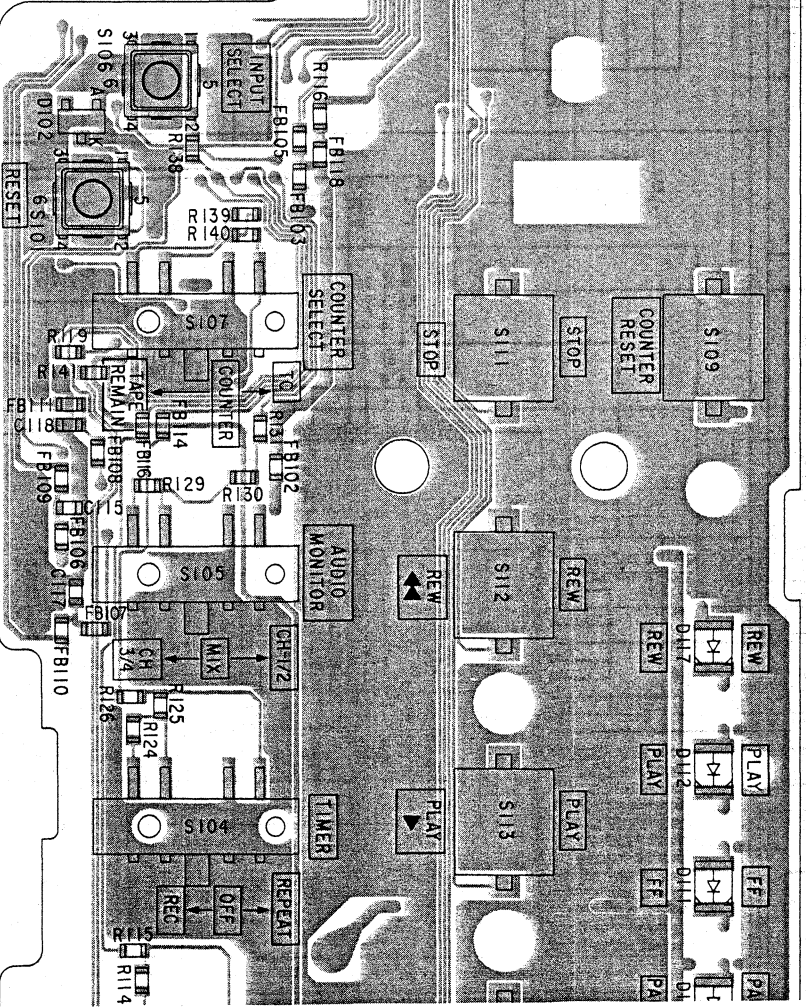
10



100



-
- A diagram of a rectangular block. The left side is labeled 'B', the right side is labeled 'C', and the bottom side is labeled 'E'.



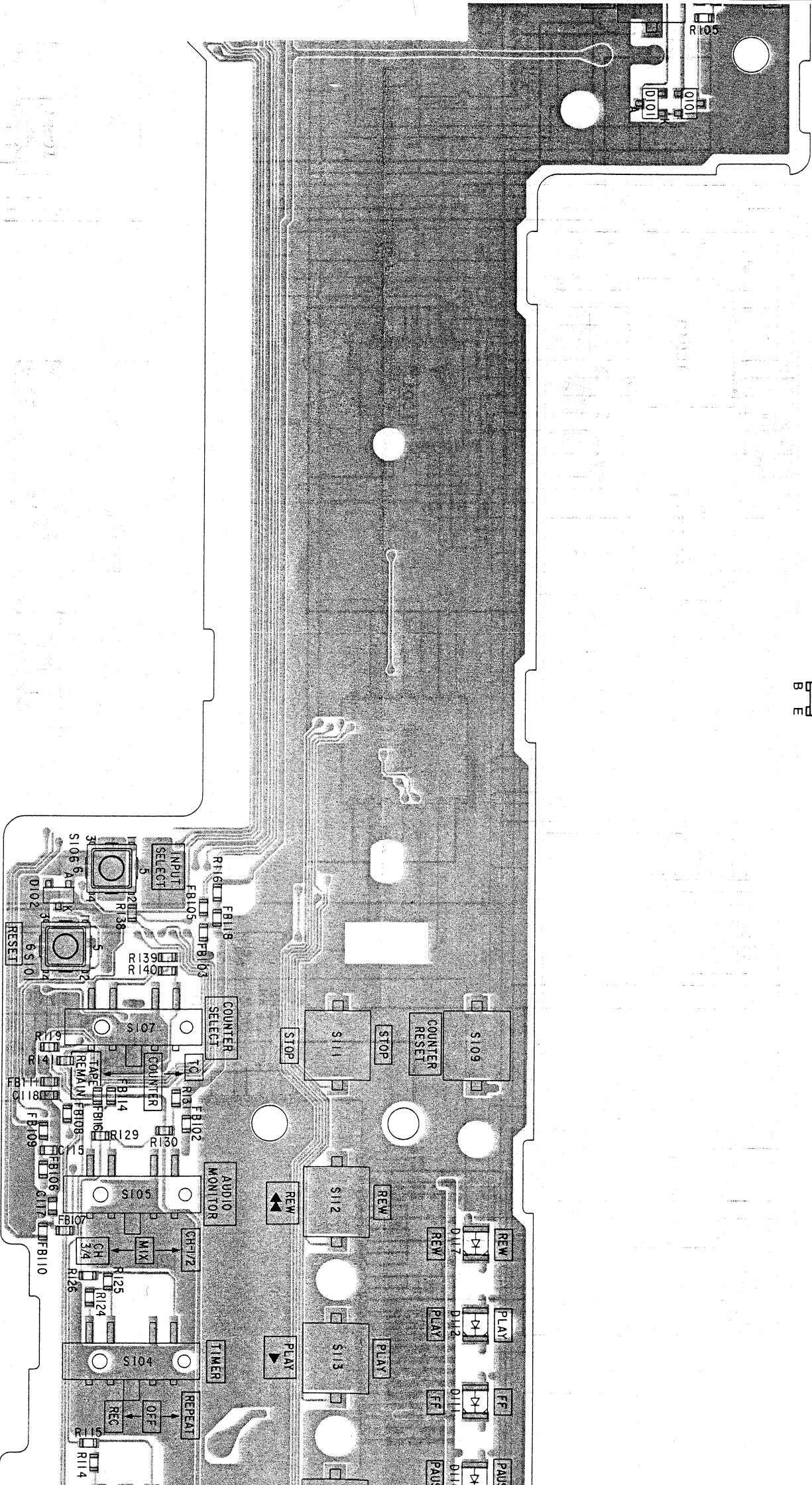
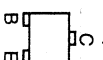
-

L) PRINTED WIRING BOARD

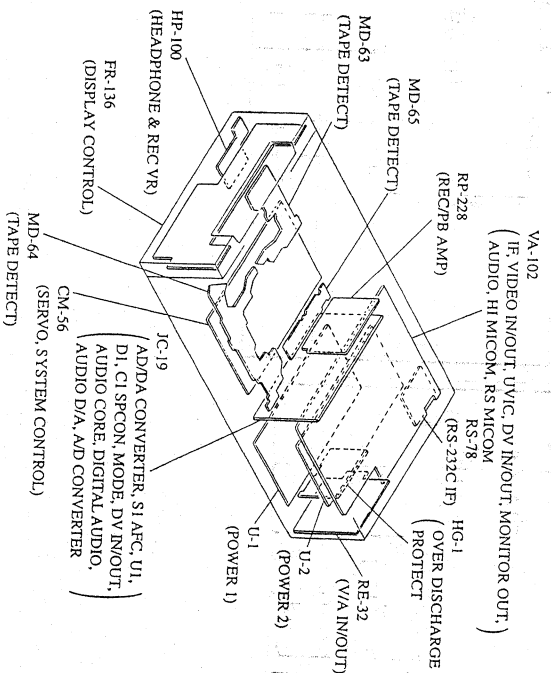
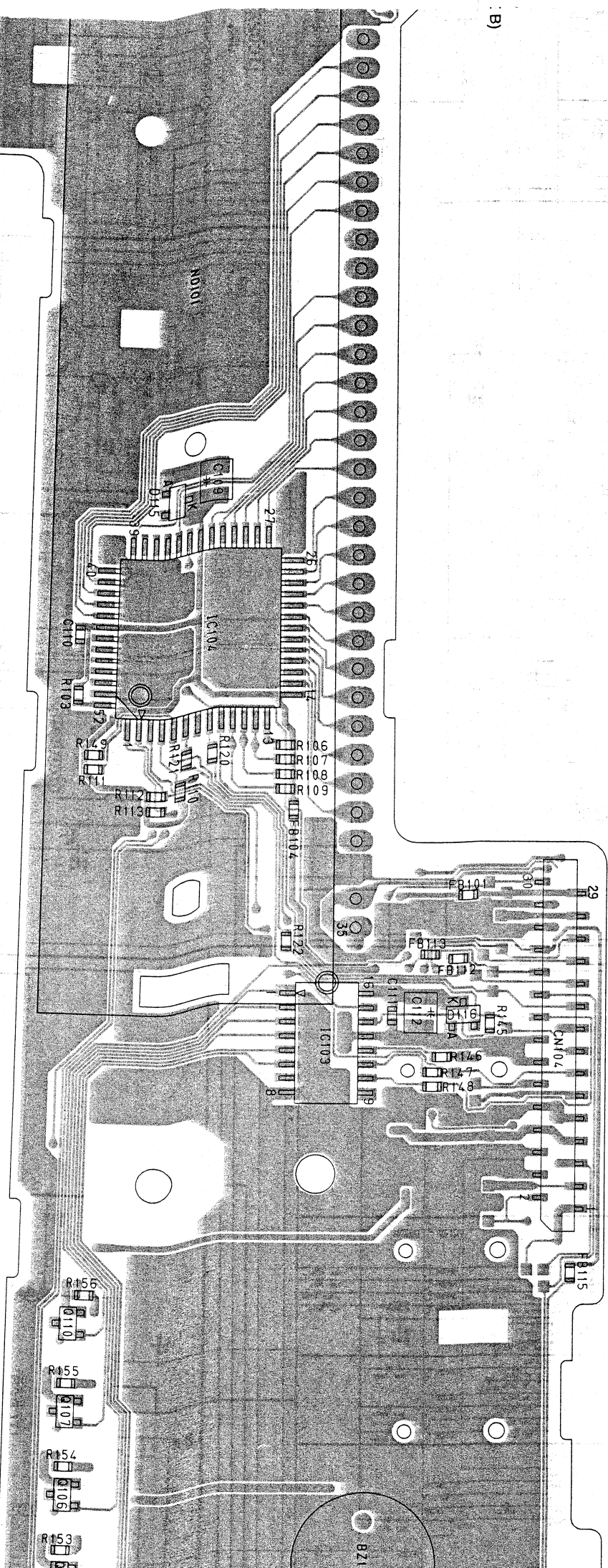
eries —

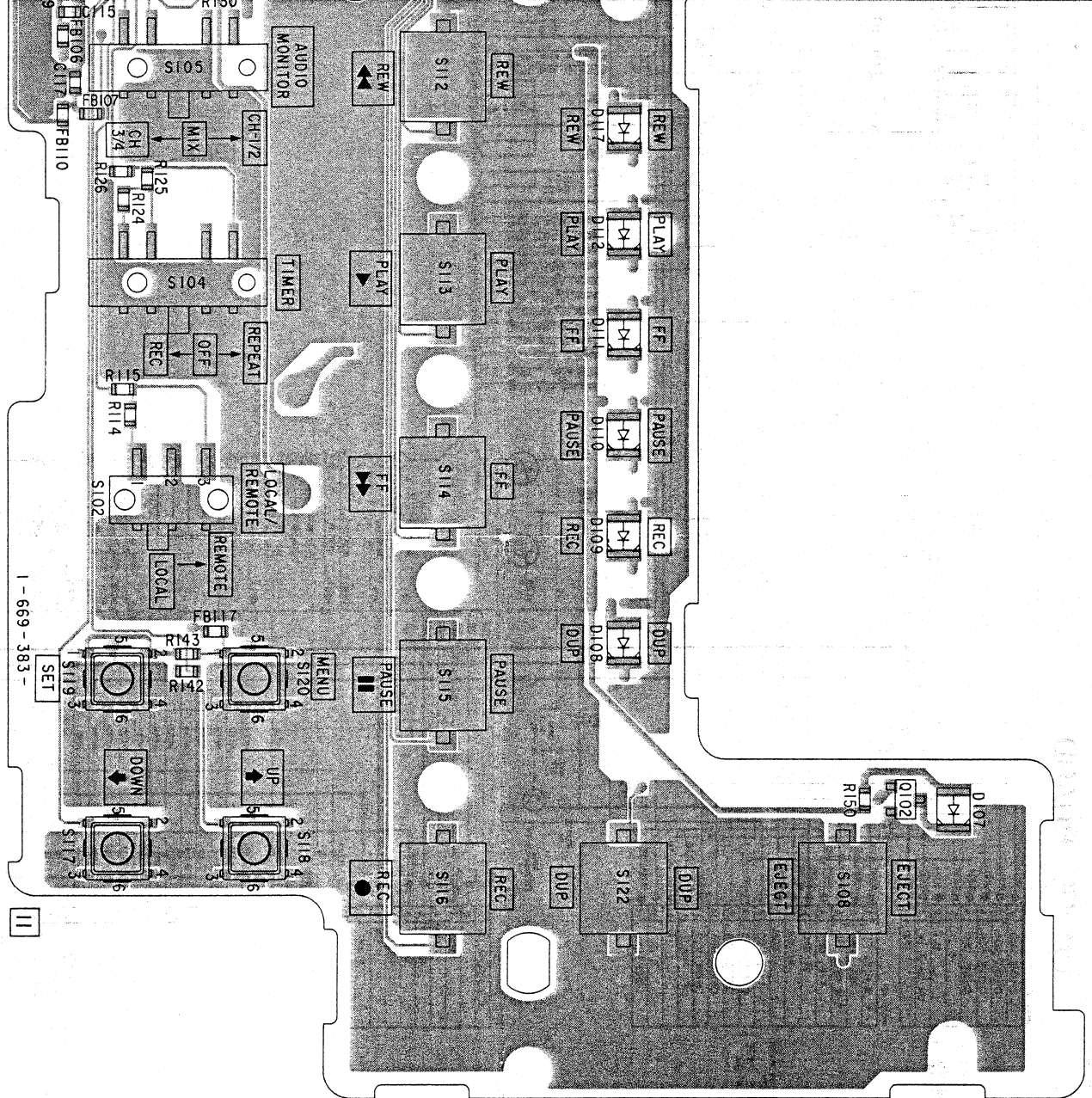
(SIDE A)

- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



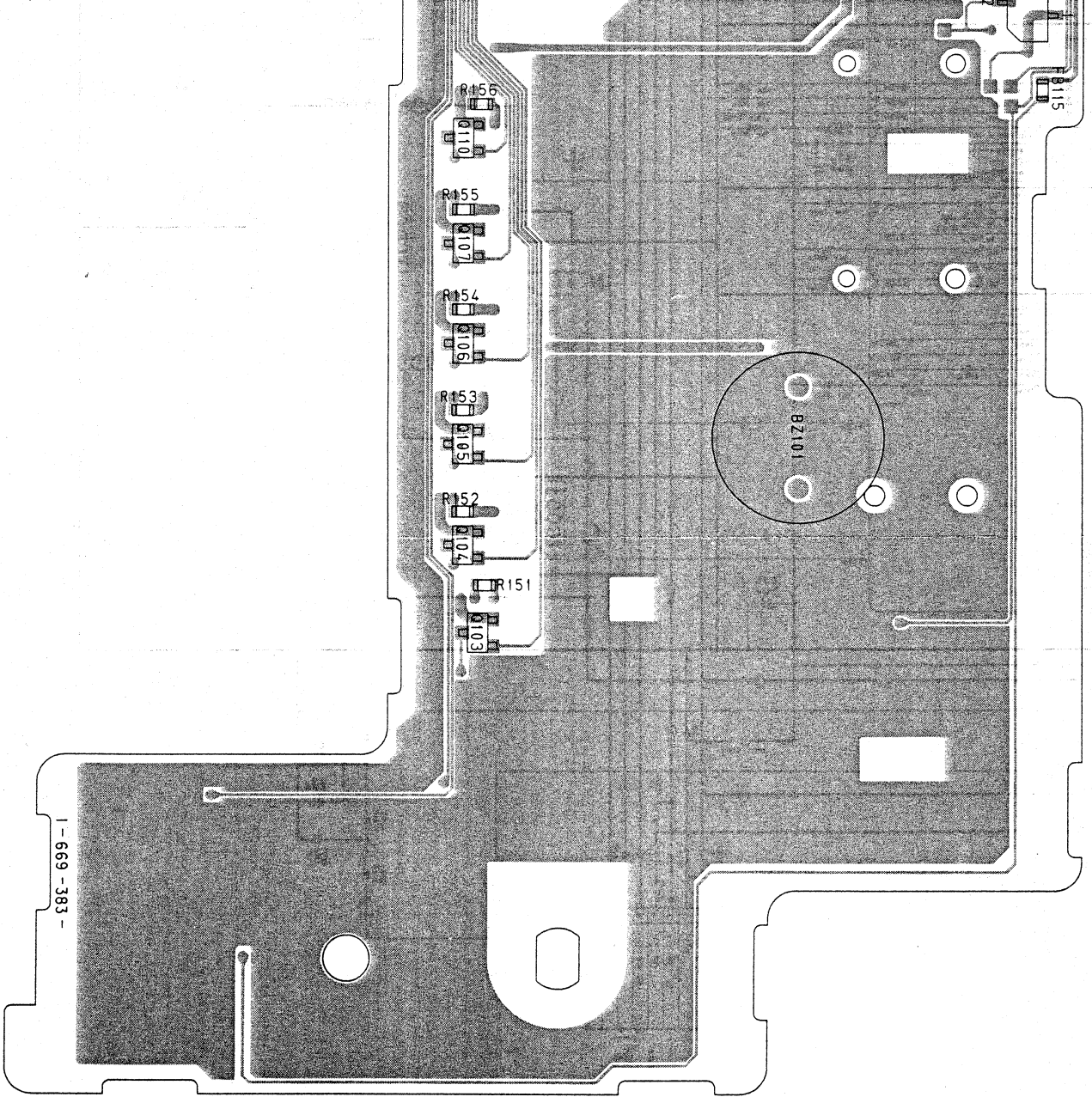
: B)





1-669-383-

11

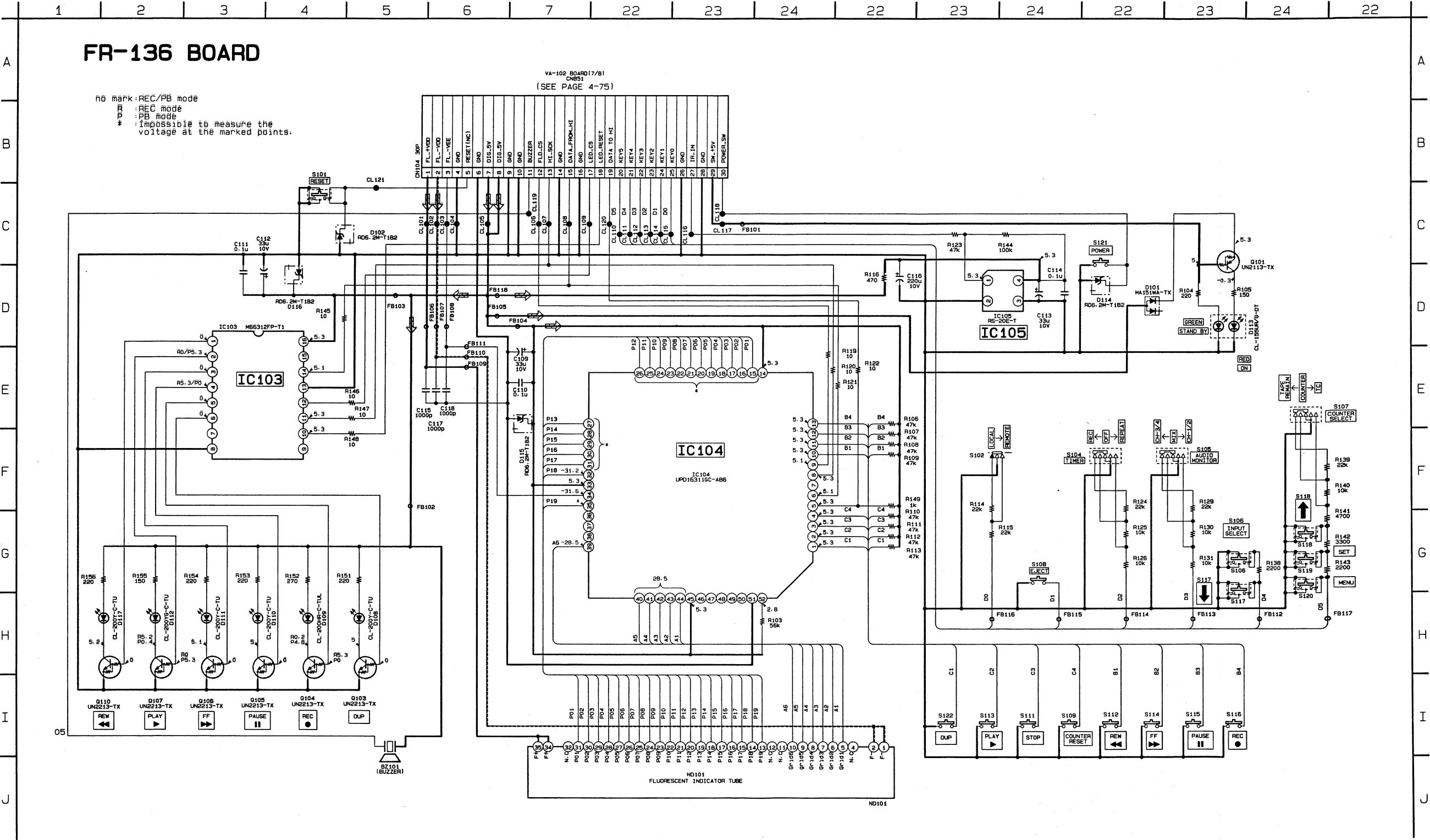


1-669-383-

11

FR-136 (DISPLAY CONTROL) SCHEMATIC DIAGRAM

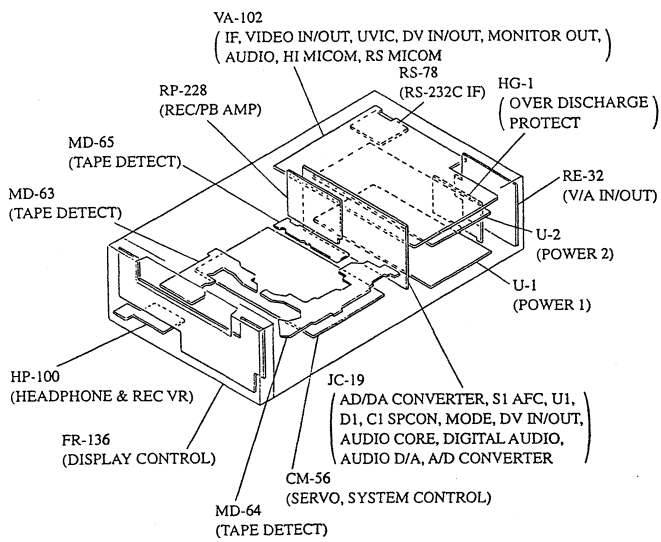
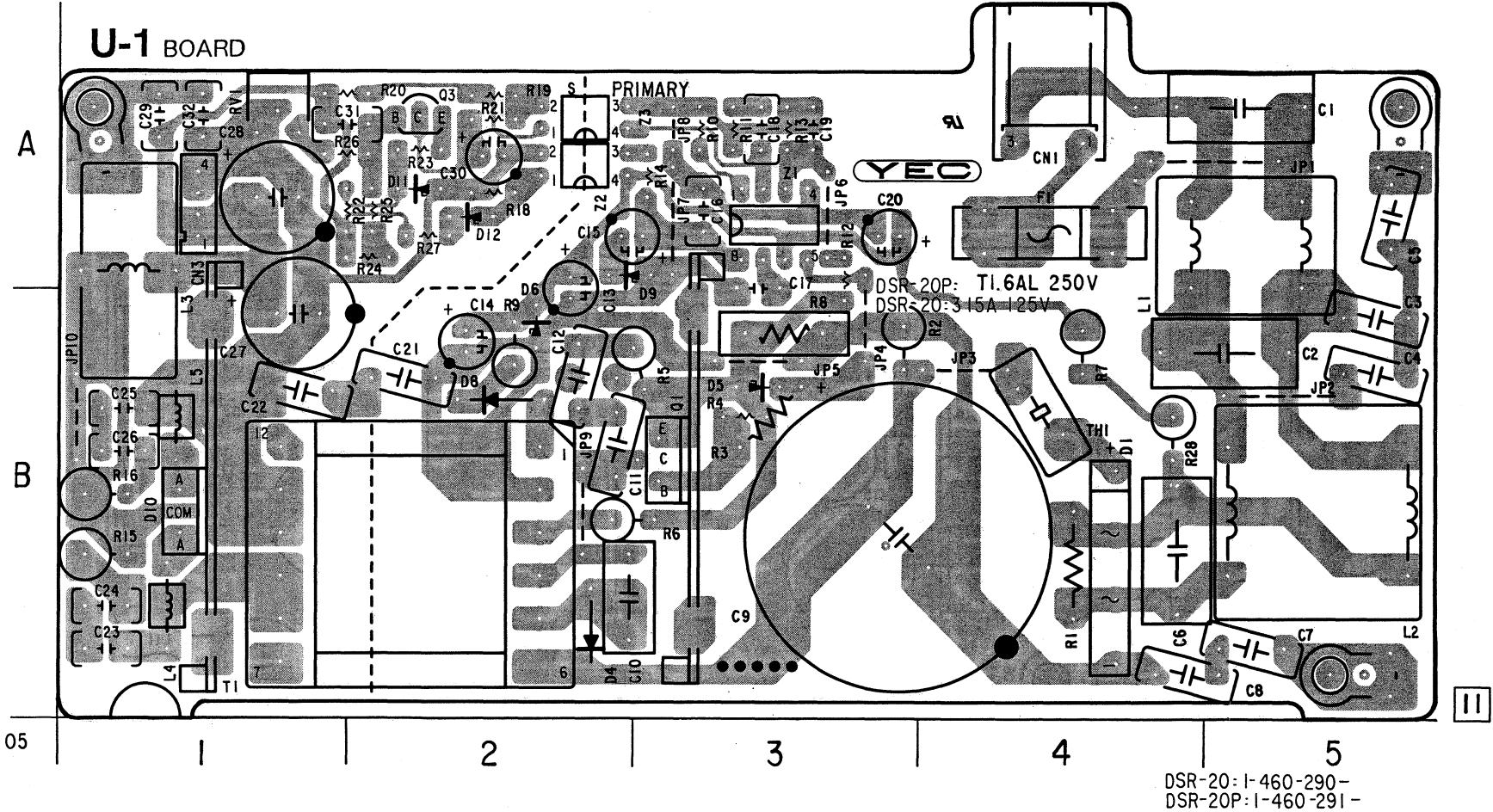
— Ref. No. : FR-136 board; 5,000 series —



- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.

U-1 (POWER 1) PRINTED WIRING BOARD

— Ref. No. : U-1 board; 10,000 series —

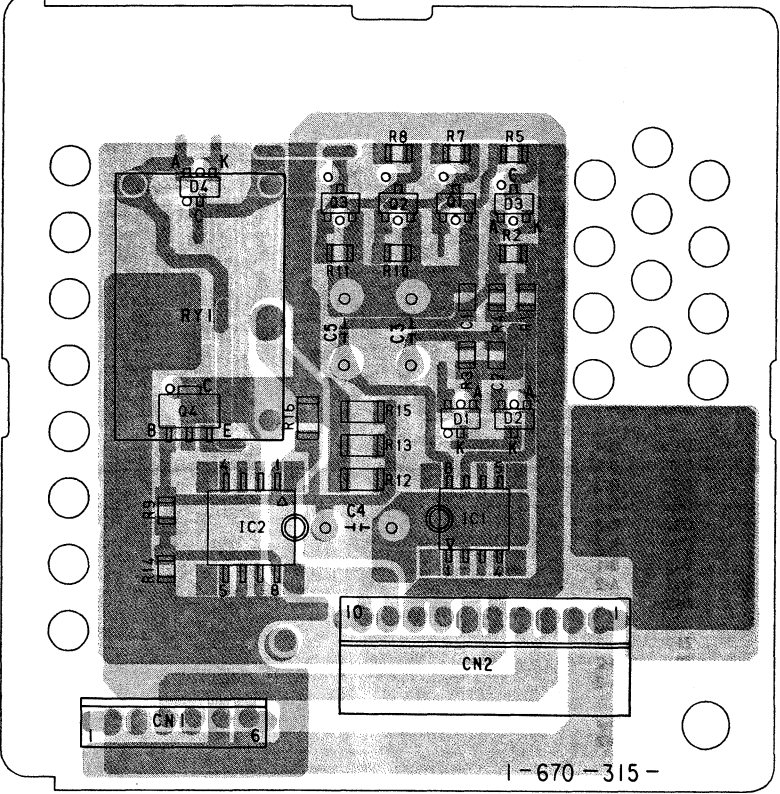


HG-1 (OVER DISCHARGE PROTECT), U-2 (POWER 2) PRINTED WIRING BOARD

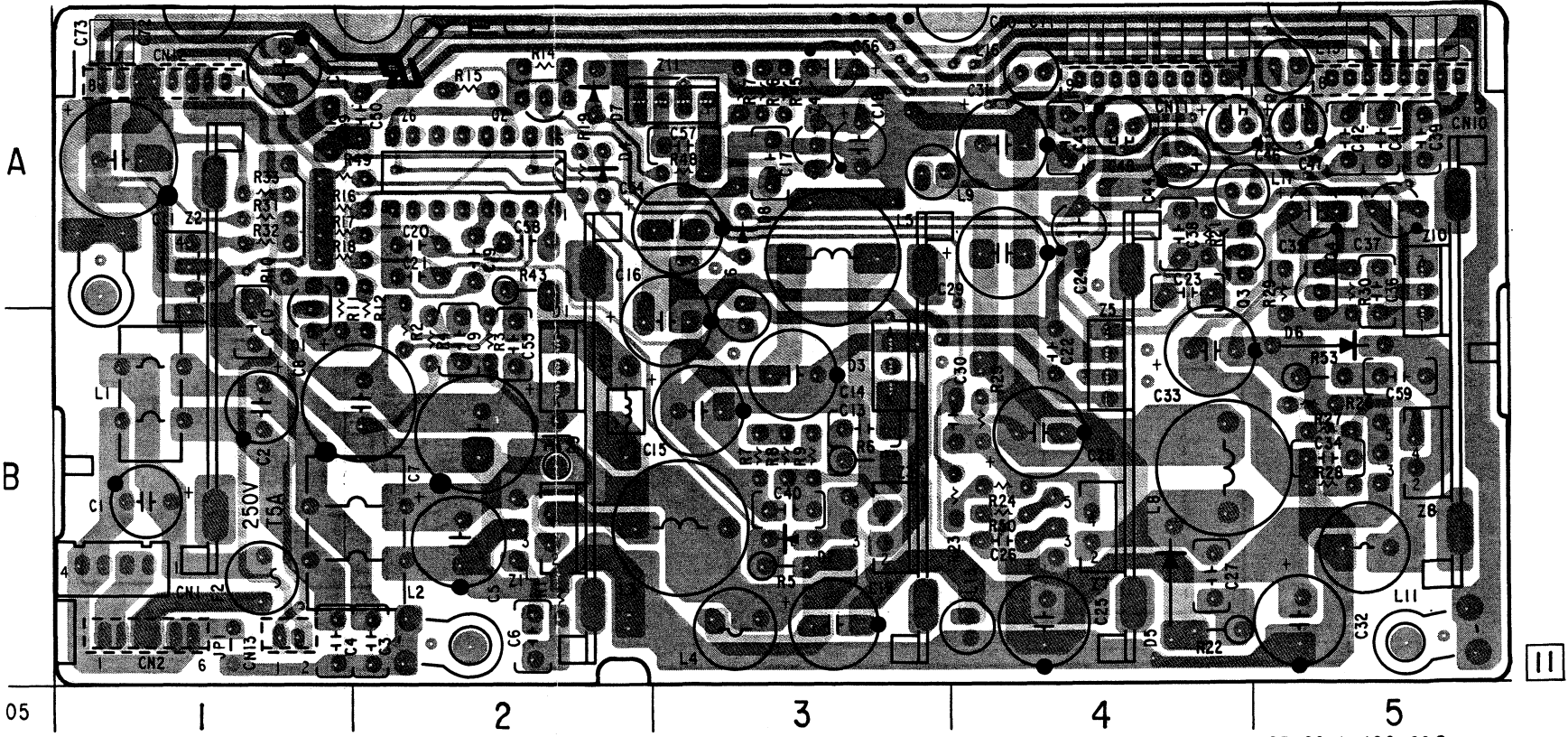
— Ref. No. : HG-1 board; 8,000 / U-2 board; 20,000 series —

- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.

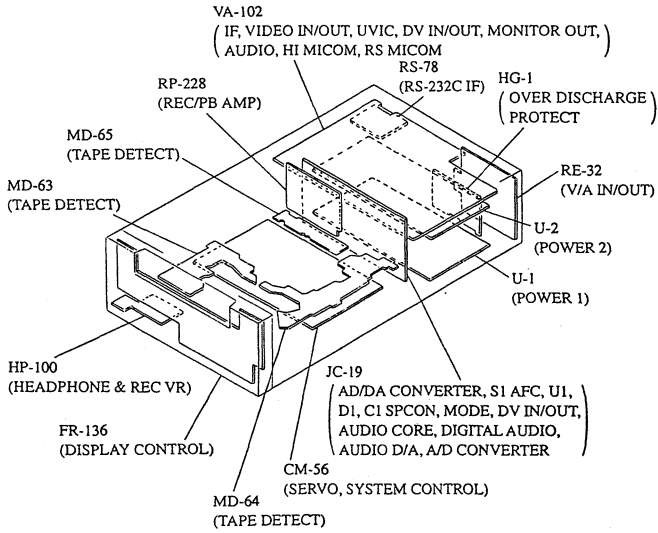
HG-1 BOARD



U-2 BOARD



DSR-20:I-460-290-
DSR-20P:I-460-291-

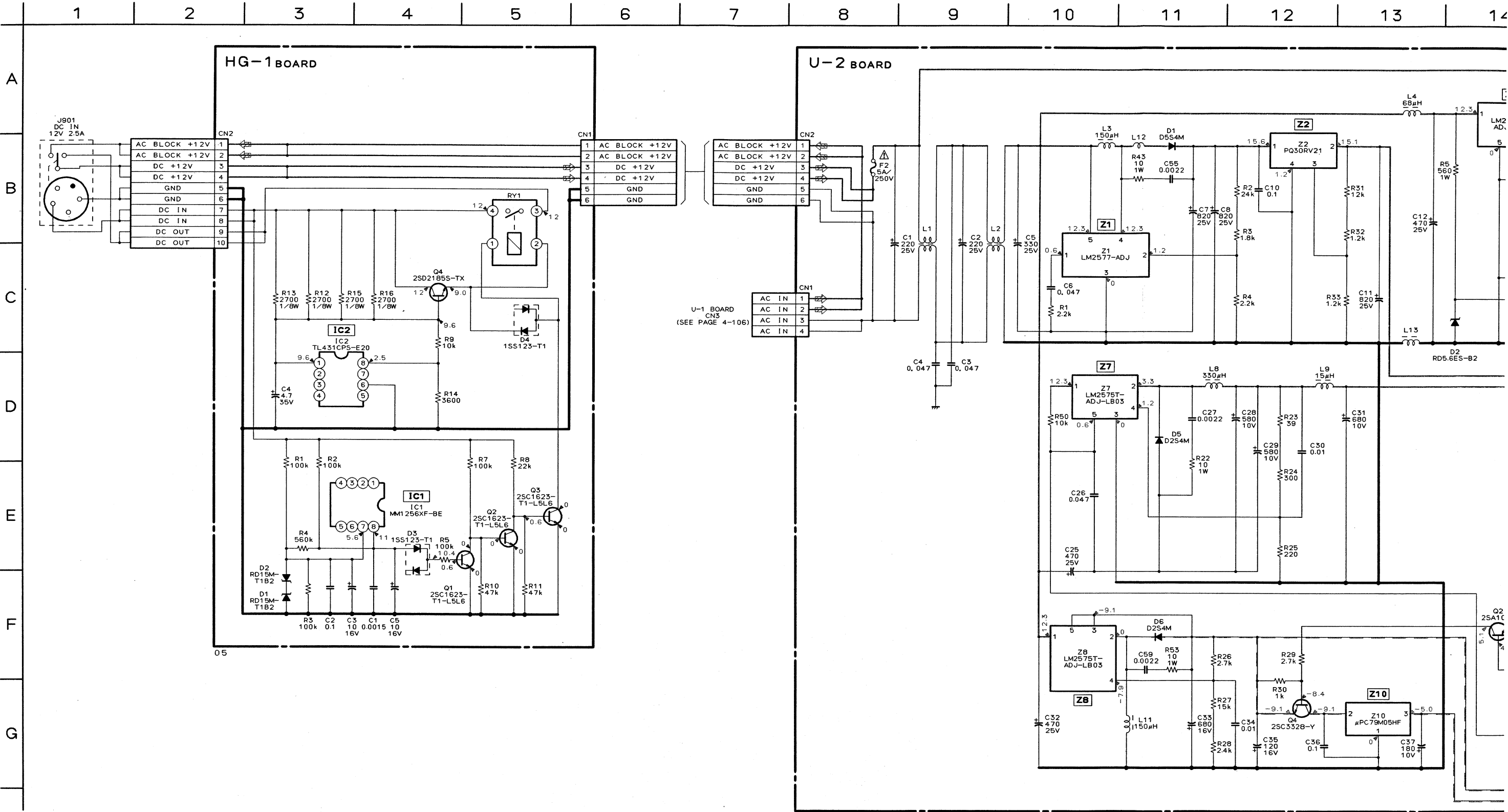


U2 BOARD

CN1	B-1
CN2	B-1
CN10	A-5
CN11	A-4
CN12	A-1
CN13	B-1
D1	B-2
D2	B-3
D3	B-3
D4	A-2
D5	B-4
D6	B-5
D7	A-2
D8	A-3
Z1	B-2
Z2	A-1
Z3	B-3
Z4	A-3
Z5	B-4
Z6	A-2
Z7	B-4
Z8	B-5
Z10	A-5
Z11	A-3
Q1	B-1
Q2	A-2
Q3	A-4
Q4	A-5

HG-1 (OVER DISCHARGE PROTECT), U-2 (POWER 2) SCHEMATIC DIAGRAM

— Ref. No. : HG-1 board; 8,000 / U-2 board; 20,000 series —



Note:
The components identified by
mark Δ or dotted line with
mark Δ are critical for safety.
Replace only with part num-
ber specified.

Note:
Les composants identifiés par une
marque Δ sont critiques pour la
sécurité.
Ne les remplacer que par une pièce
portant le numéro spécifié.



SECTION 5 ADJUSTMENTS

5-1. MECHANICAL SECTION ADJUSTMENTS

5-1-1. INFORMATION

1. HOW TO SEARCH REFERENCE PAGES FOR REMOVAL

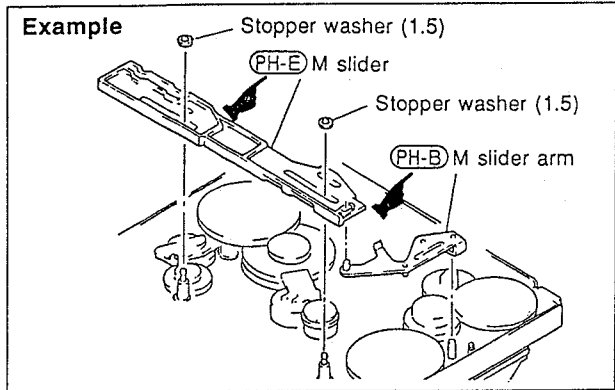
- To facilitate finding the required pages on how to removing and attaching parts, reference pages are listed in the remarks of the exploded views (6-4 to 6-9 pages) in the 5-1. Mechanical Section Adjustment.

not supplied	Ref. page No.
①	Page 5-40
②	Page 5-40
③	Page 5-38
④	Page 5-41
⑤	Page 5-41

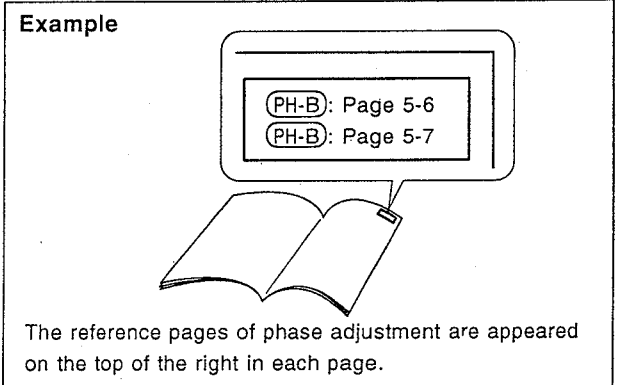
Ref. No.	Part No.	Description	Ref. Page No.	Ref. No.
* 701	A-7092-644-A	FL BLOCK ASSY	(5-2)	708
702	A-7092-647-A	SLOAT BLOCK ASSY, C	(5-41)	709
703	3-967-604-01	SPRING (DB), TENSION	(④: 5-40/⑤: 5-41)	710
704	3-967-655-01	DOOR, C	(5-40)	711
705	3-967-613-01	SPRING (HS), TENSION COIL	(5-41)	712

2. PHASE ADJUSTMENT MARK “(PH-)”

Numerous phase adjustments must be performed for removing and attaching parts (replacing parts) of the E mechanism. When removing and attaching parts, be sure to check the phase adjustment of corresponding parts. Parts that need phase adjustment are indicated with (PH-) mark. When replacing parts indicated with (PH-) mark, check their positions and phases so that the parts are attached smoothly in later.



In case of the above figure, refer to (B) and (E) of “5-1-3. PHASE ADJUSTMENTS”

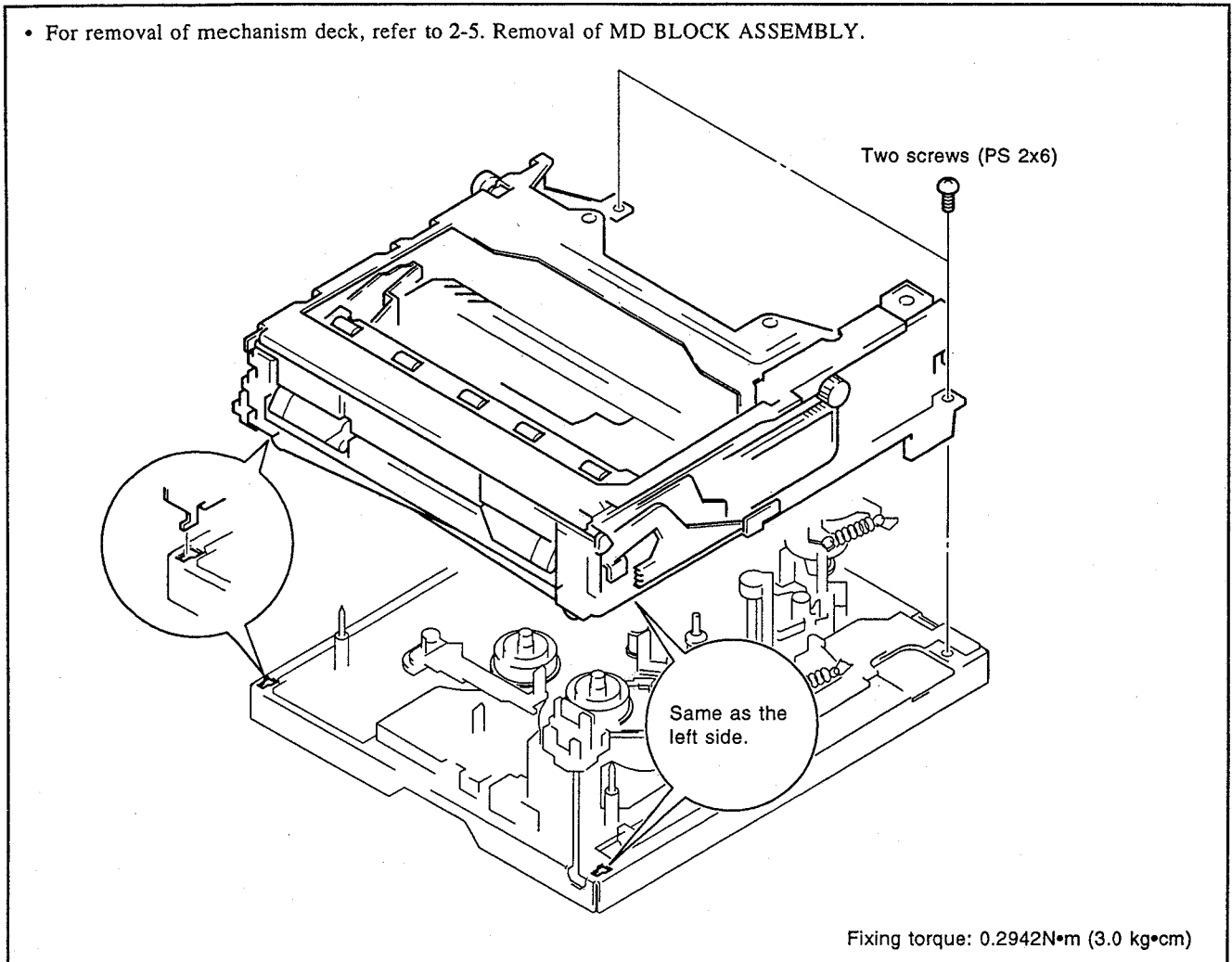


5-1-2. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

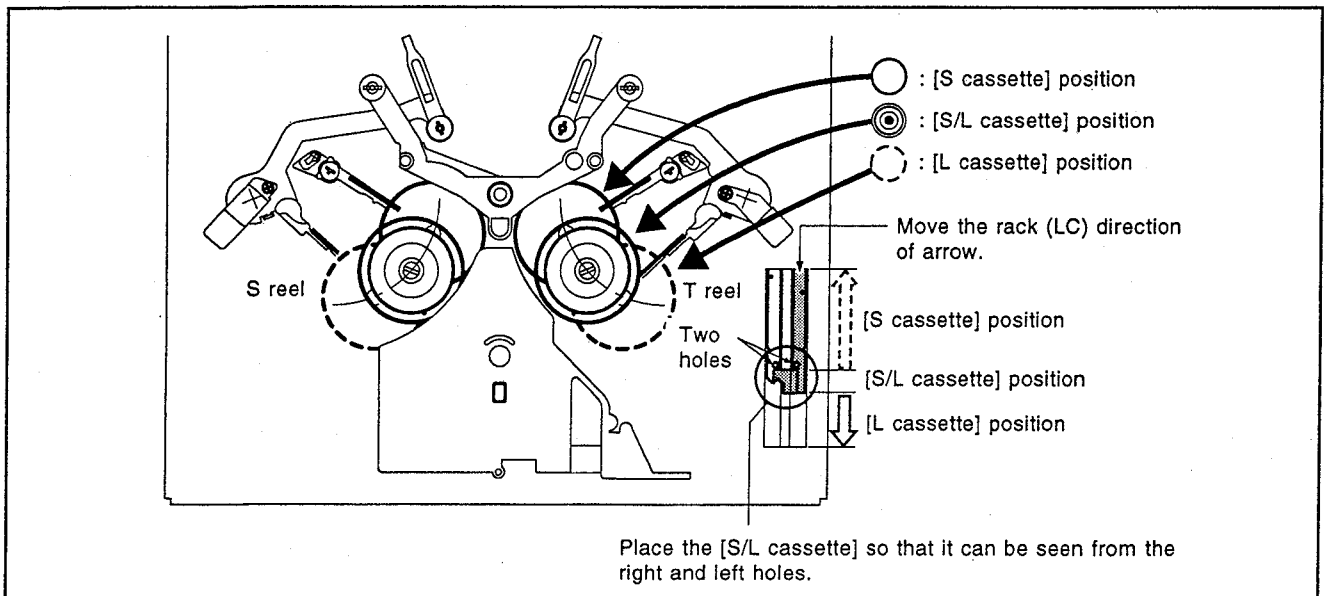
2-1. FL BLOCK ASSEMBLY

• Removing/Attaching

- For removal of mechanism deck, refer to 2-5. Removal of MD BLOCK ASSEMBLY.



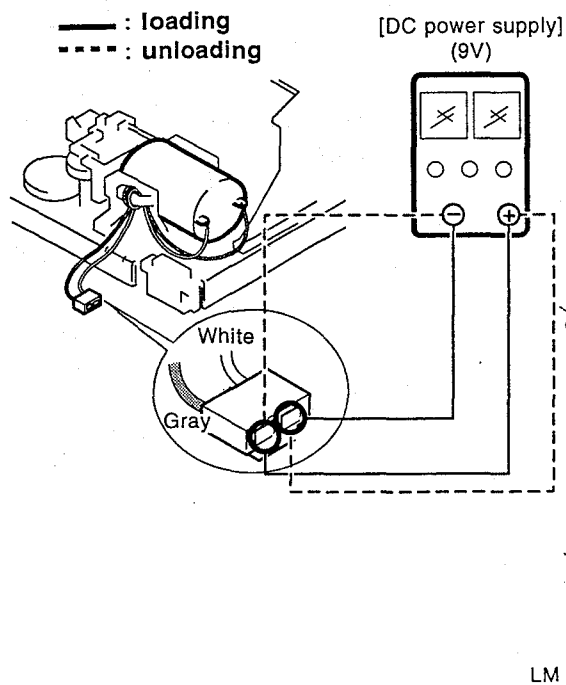
2-2. CASSETTE POSITIONS



2-3. LOADING/UNLOADING

[Using the DC power supply] : With a loading motor

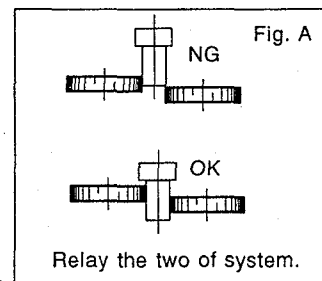
Note: Be sure to disconnect the connector of the loading motor before servicing.



[Manual] : Without a loading motor

Note: If the LM worm wheel is rotated in the state shown in figure A (not engaged with the relay gear), the phases of the pinch drive system and the loading drive system will shift. (Refer to phase adjustment ④ on page 5-7 for details of phase adjustment.)

→ : loading
⇒ : unloading



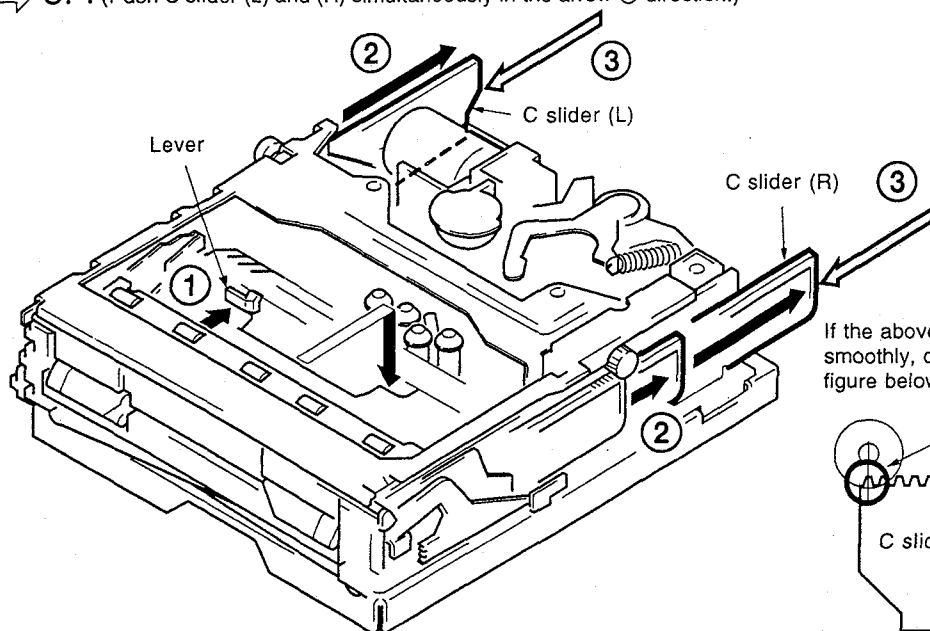
LM worm wheel

Relay gear

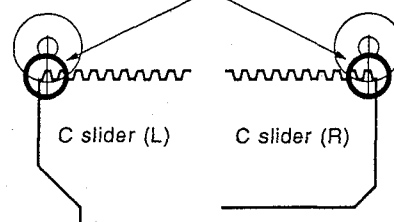
2-4. MANUAL UP/DOWN THE FL BLOCK

➡ **DOWN.** (While pushing the lever in the arrow ① direction, push C slider (L) and (R) simultaneously in the arrow ③ direction.)

⇒ **UP.** (Push C slider (L) and (R) simultaneously in the arrow ③ direction.)



If the above operation cannot be performed smoothly, check the phase as shown in the figure below (Cassette compartment is UP.)



2-5. SERVICE JIGS LIST

Ref. No.	Name	Part No.	Fixtur No.	Usage, Others Application, etc
J-1	Cleaning fluid	Y-2031-001-0		For cleaning drum assembly and tape guide
J-2	Wiping cloth	7-741-900-53		For cleaning drum assembly
J-3	Super fine applicator (Made by NIPPON APPLICATOR (P752D))			For cleaning tape guide
J-4	Mirror (Small oval type)	J-6080-840-A	GD-2038	Tape path
J-5	Tracking tape (XH2-1AST) Standard cassette	8-967-999-01		Tape path (for tape top checking)
	Tracking tape (XH2-1ASE) Standard cassette	8-967-999-06		Tape path (for tape end checking)
	Tracking tape (XH2-1A1) Mini cassette	8-967-999-03		Tape path (for checking)
J-6	Mini DV torque cassette	J-6082-360-A		For adjusting FWD/RVS back tension
J-7	Cassette standard plate (D/E mechanism)	J-6082-330-A		For adjusting tape guide and reel table
J-8	Reel standard plate (D/E mechanism)	J-6082-331-A		For adjusting reel table
J-9	TG2/7 preset plate	J-6082-358-A		For adjusting tape guide
J-10	Screwdriver for tape path	J-6082-026-A		For adjusting tape guide
J-11	Adjusting remote commander (RM-95 remodeled partly) Note1	J-6082-053-B		Tape path
J-12	Torque driver	J-9049-330-A		Mechanism check and replacement
J-13	Tension regulator adjustment board	J-6082-359-A		Electric tension regulator adjustment
J-14	CPC 8-jig	J-6082-388-A		Tape path



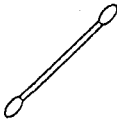
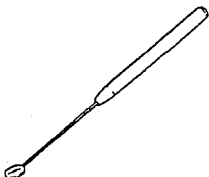
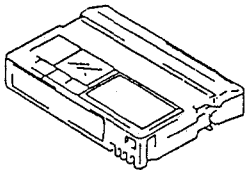
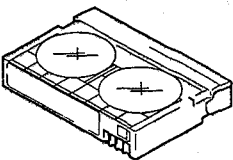
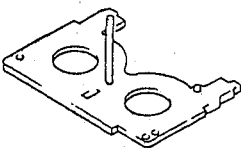


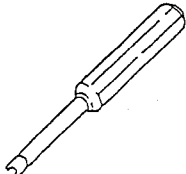
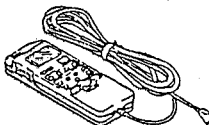
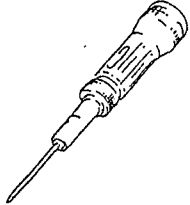
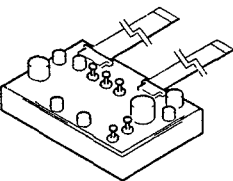
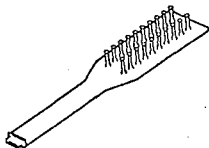
Other equipment used

- Oscilloscope
- DC power supply
- Digital voltage meter

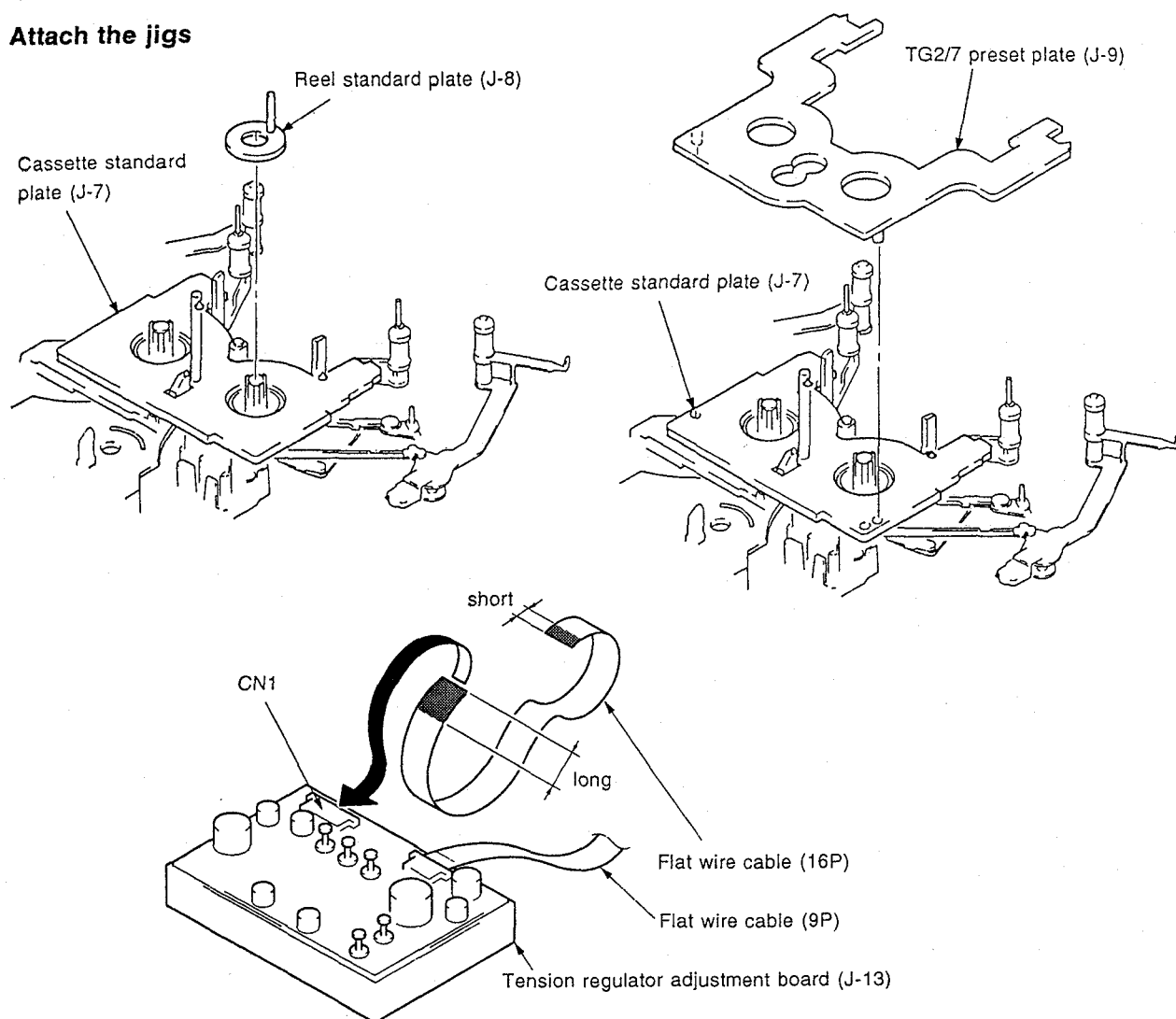
Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Tape path:

1. Make a checking and adjustment at the tape top using the XH1-1AST tape.
2. Then, make a checking with the XH2-1ASE (for tape end) and XH2-1A1 (Mini cassette for tape top and end).
If NG, make adjustment using respective tapes.
3. Again make a checking with the XH2-1AST.

J-1 	J-2 	J-3 	J-4 	J-5 
J-6 	J-7 	J-8 	J-9 	J-10 
J-11 	J-12 	J-13 	J-14 	

• Attach the jigs



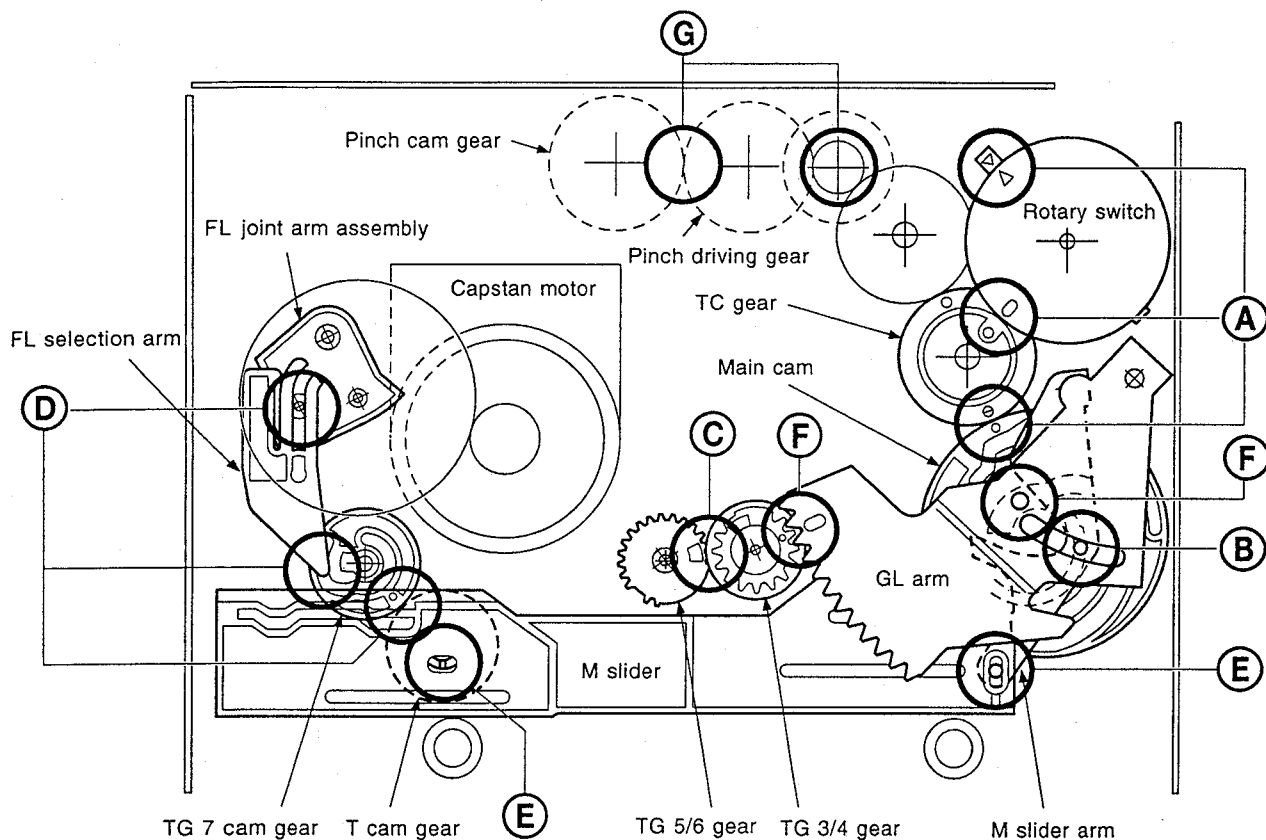
5-1-3. PHASE ADJUSTMENTS

- This section classifies the phase adjustment into three blocks for clarity. The attaching order of each part is not described here. For details of the attaching order, refer to "5-1-5. MECHANISM SECTION CHECKS AND REPLACEMENTS".

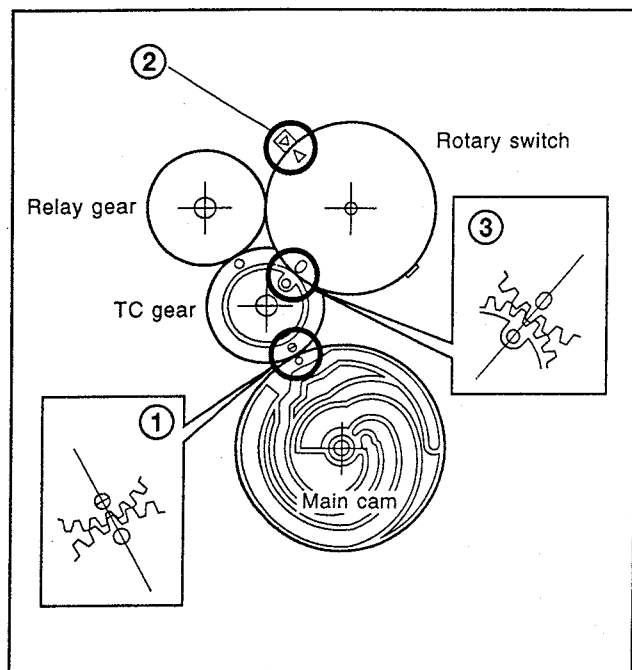
3-1. PHASE ADJUSTMENT (Loading/Unloading Driving Section)

Note 1 : Adjust it at the **UNLOADING** position unless otherwise specified.

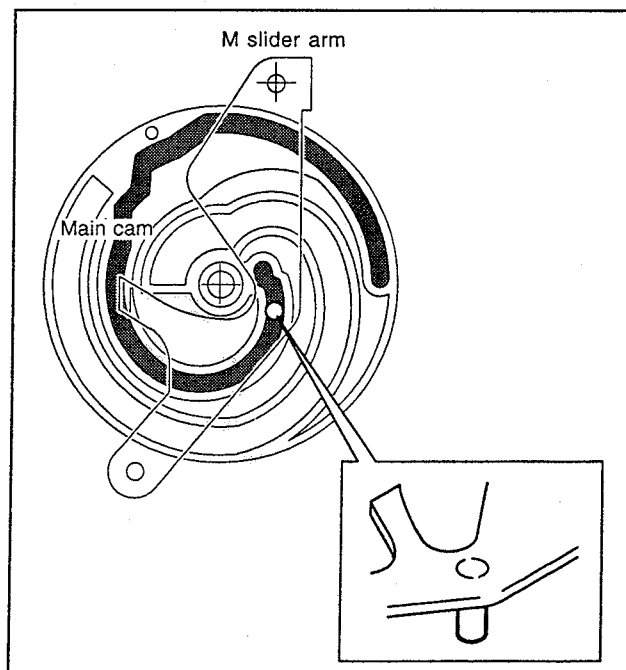
Note 2 : (A) to (G) shown below are the orders for the phase adjustment.



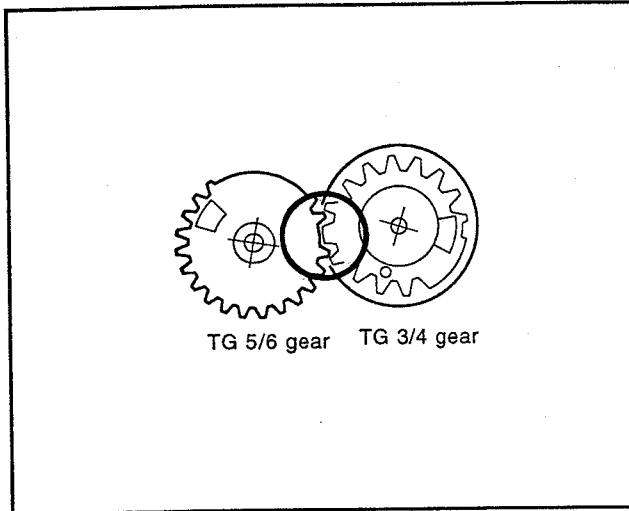
PHASE ADJUSTMENT (A)



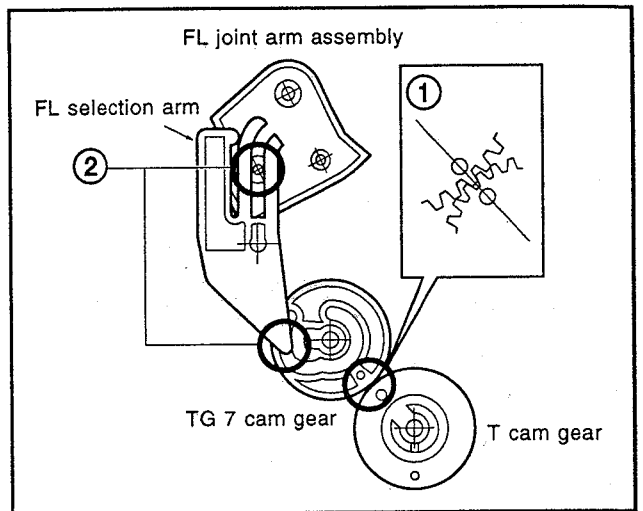
PHASE ADJUSTMENT (B)



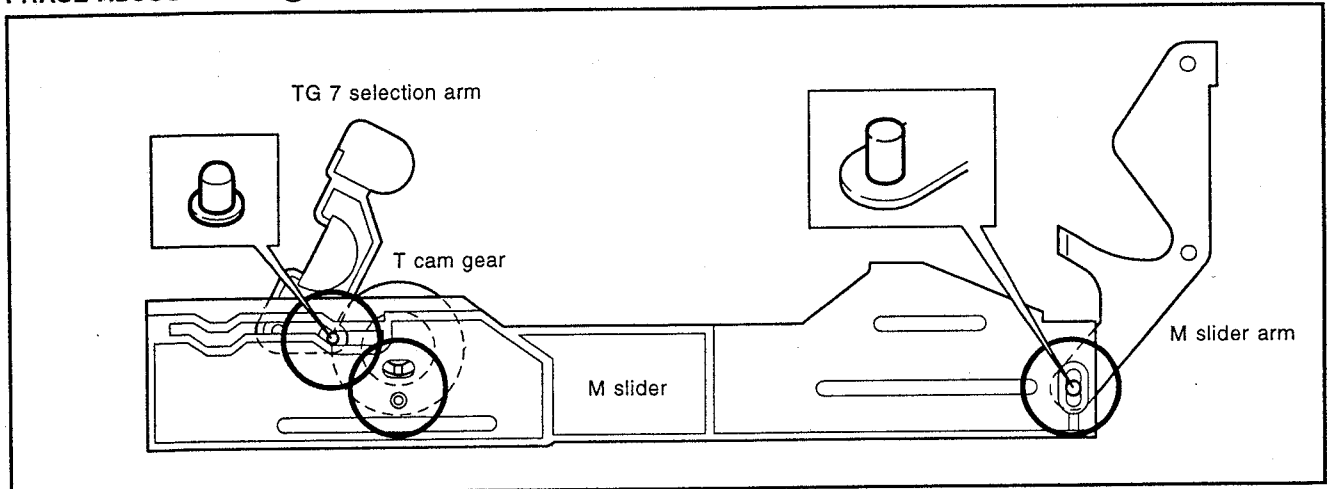
PHASE ADJUSTMENT ③



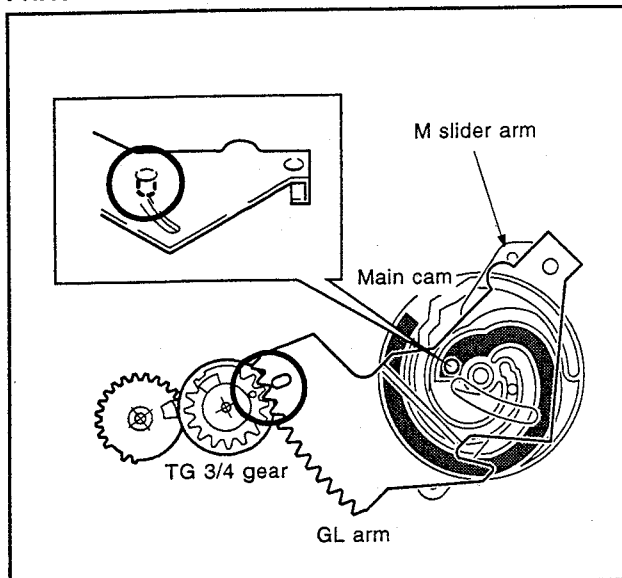
PHASE ADJUSTMENT ④



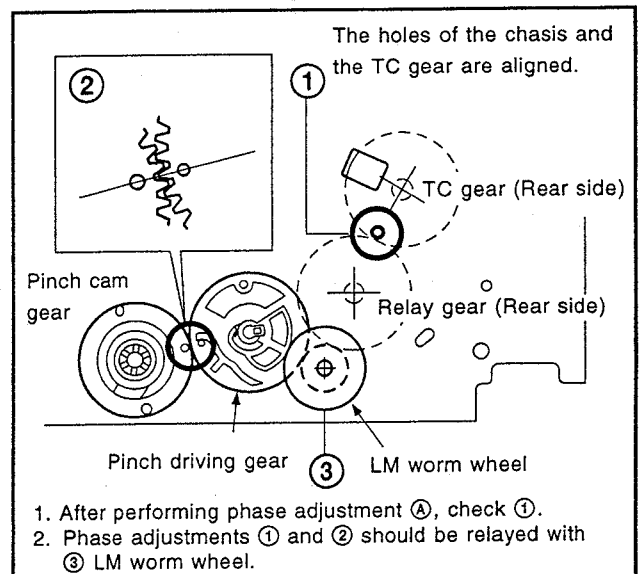
PHASE ADJUSTMENT ⑤



PHASE ADJUSTMENT ⑥



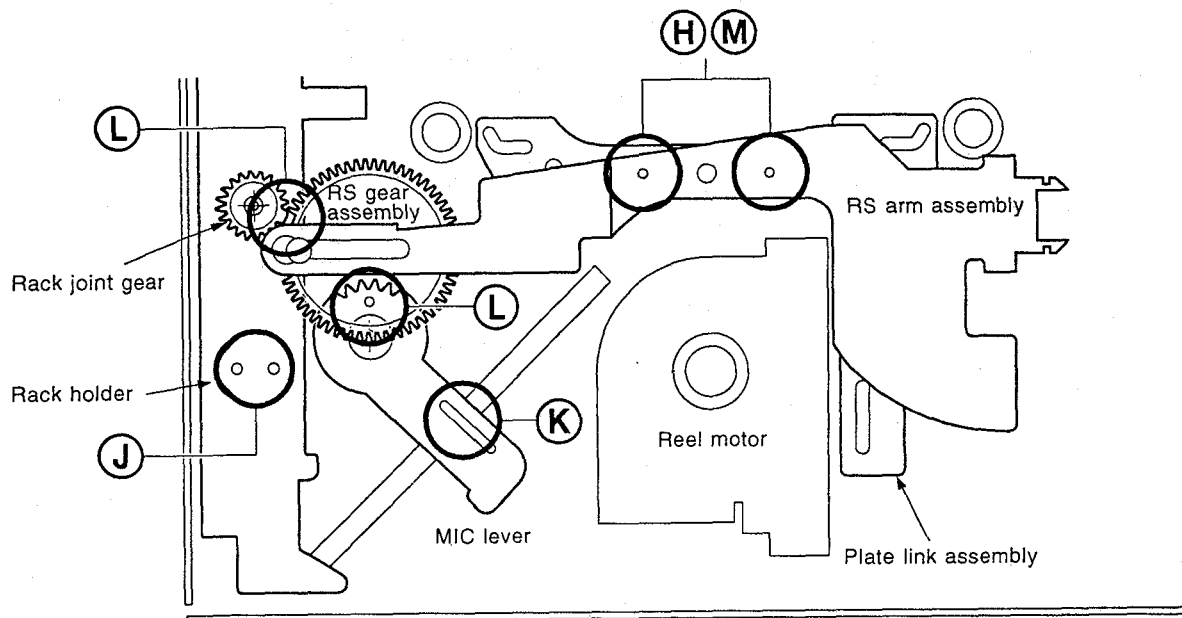
PHASE ADJUSTMENT ⑦



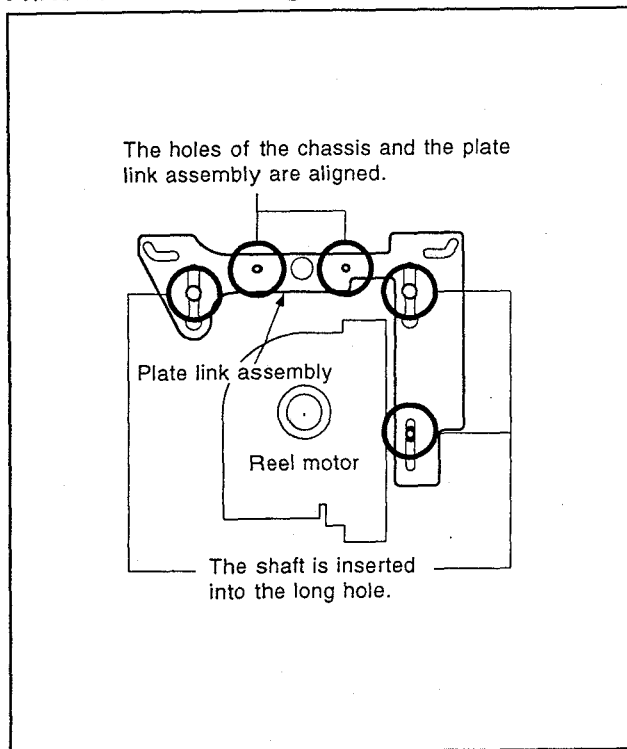
3-2. PHASE ADJUSTMENT (S/L Cassette Selection Section)

Note 1 : Adjust if at the **(S/L cassette)** position unless otherwise specified.

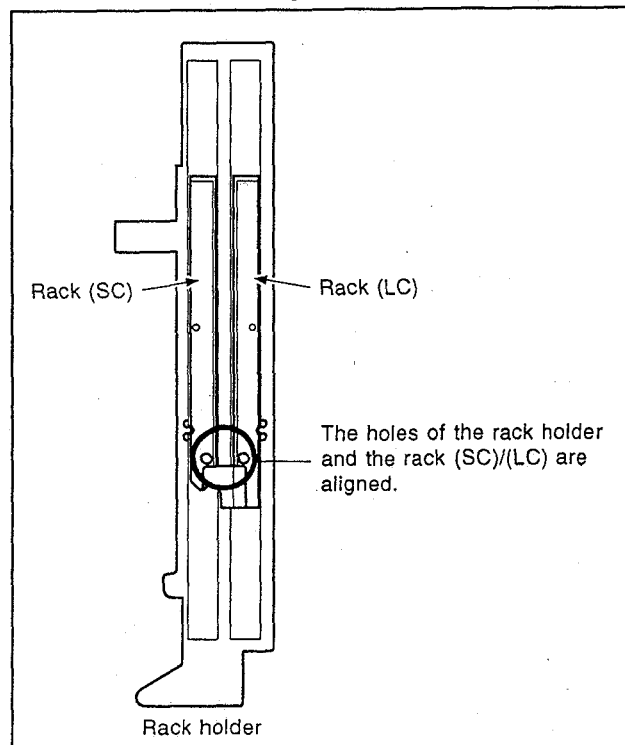
Note 2 : (H) to (M) shown below are the orders for the phase adjustment.



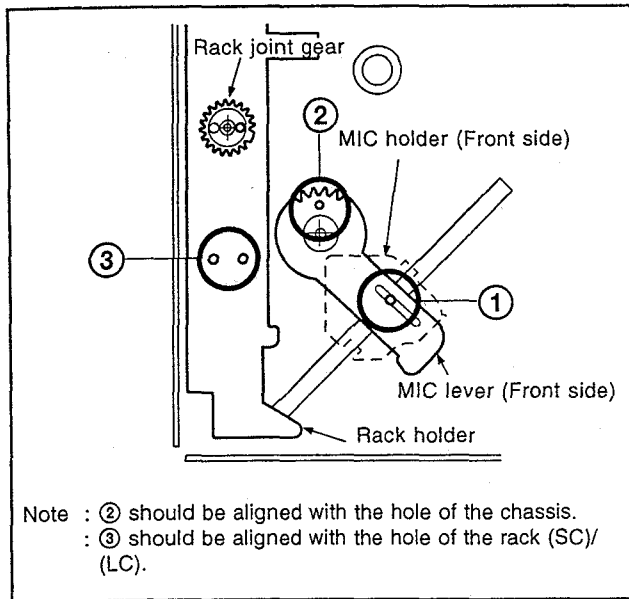
PHASE ADJUSTMENT (H)



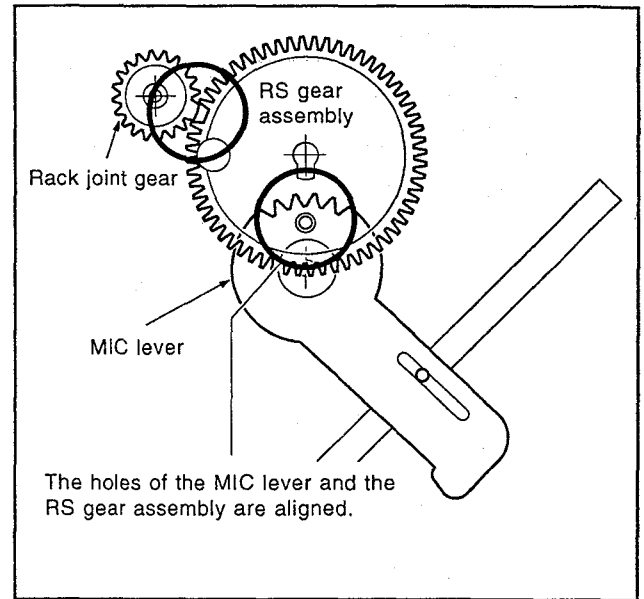
PHASE ADJUSTMENT (J)



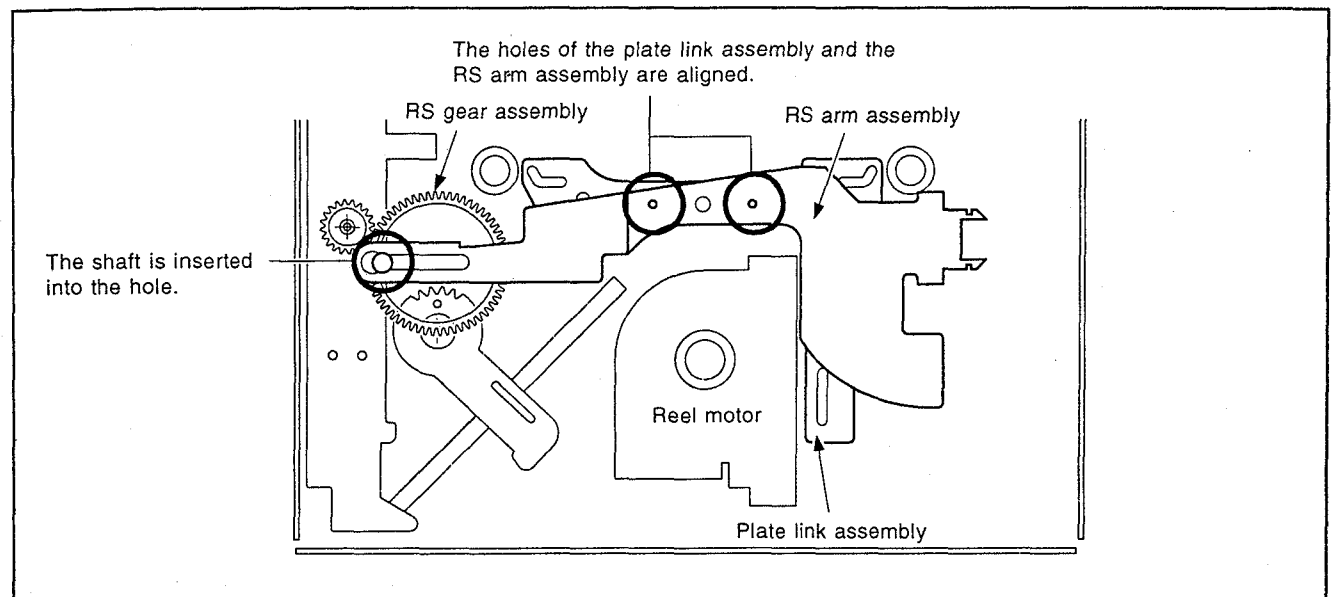
PHASE ADJUSTMENT (K)



PHASE ADJUSTMENT (L)



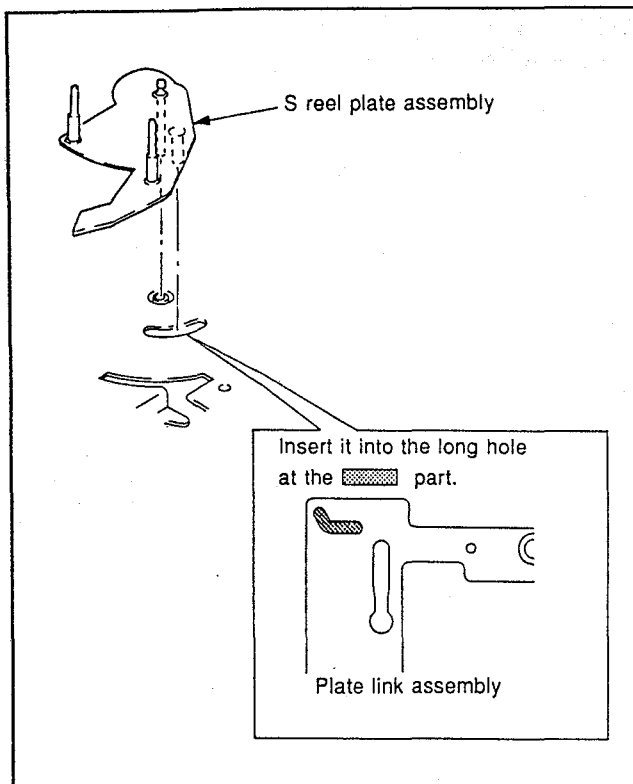
PHASE ADJUSTMENT (M)



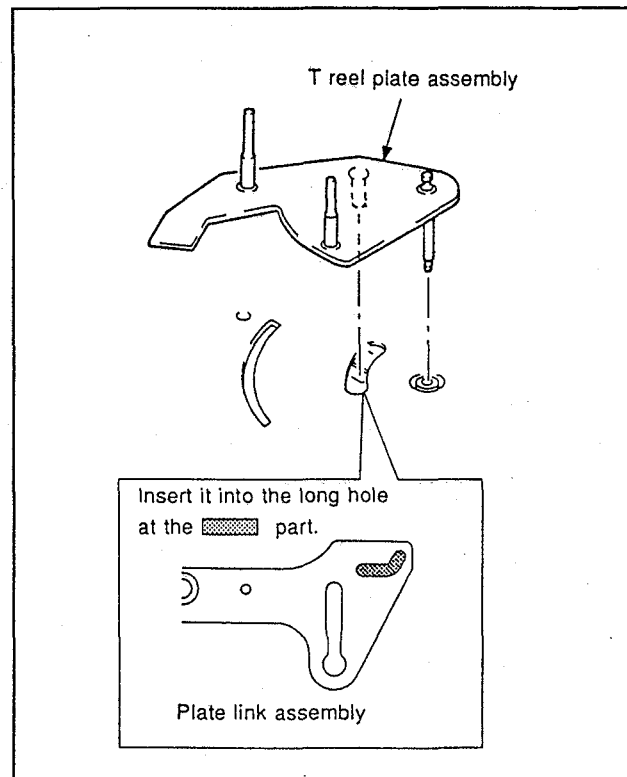
3-3. PHASE ADJUSTMENT (Mechanism Chassis Upper Surface Parts)

Note : Adjust if at the **(UNLOADING)** position unless otherwise specified.

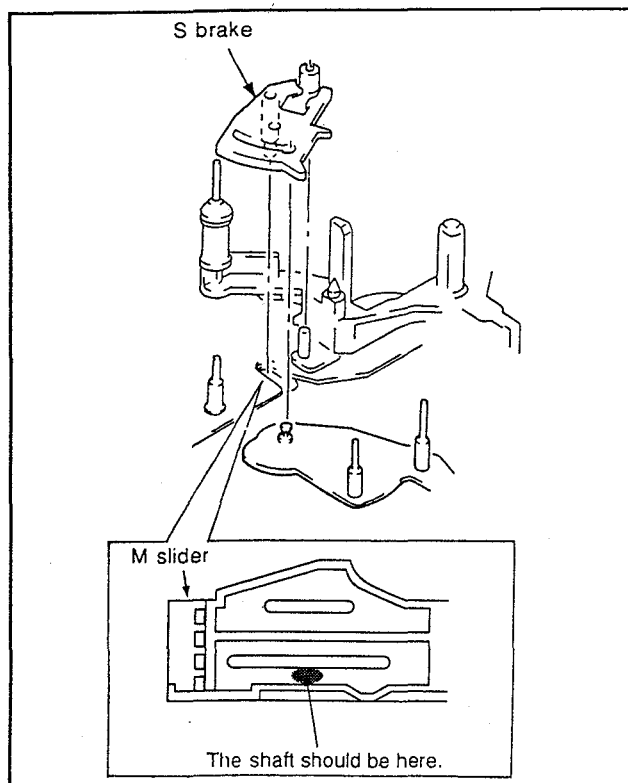
PHASE ADJUSTMENT (N)



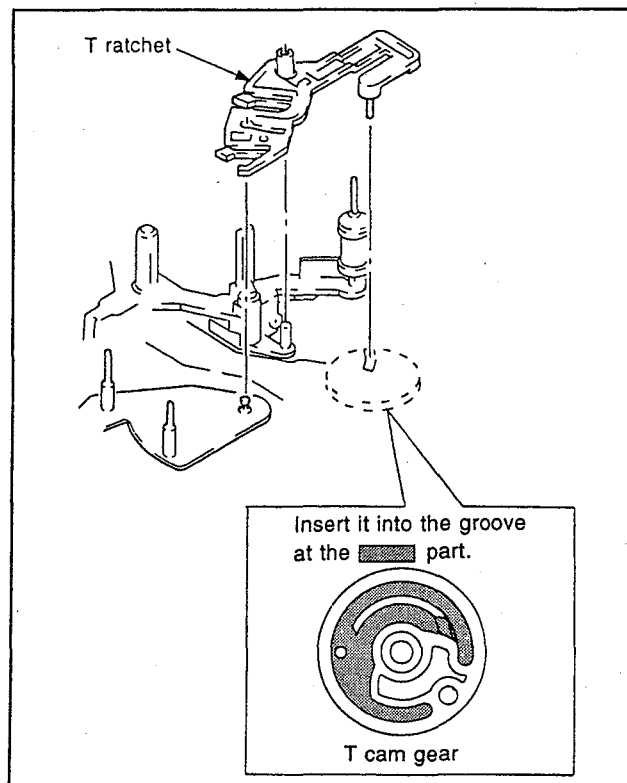
PHASE ADJUSTMENT (P)



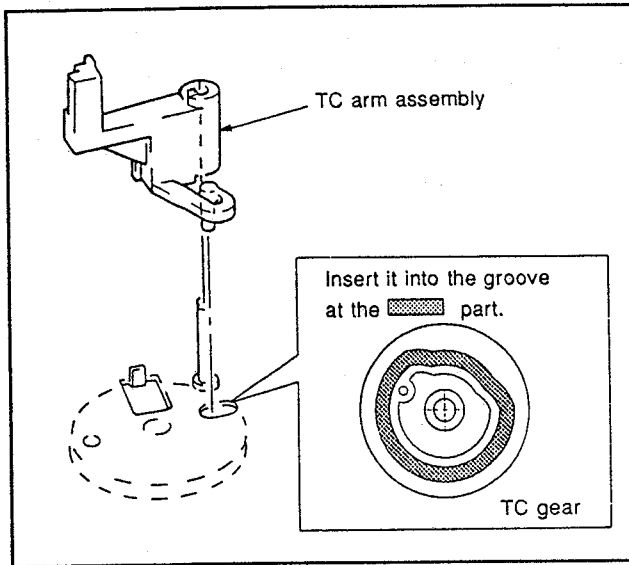
PHASE ADJUSTMENT (Q)



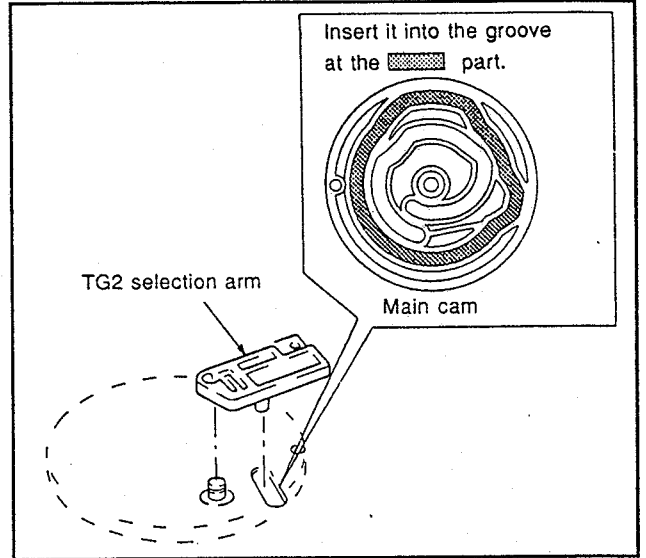
PHASE ADJUSTMENT (R)



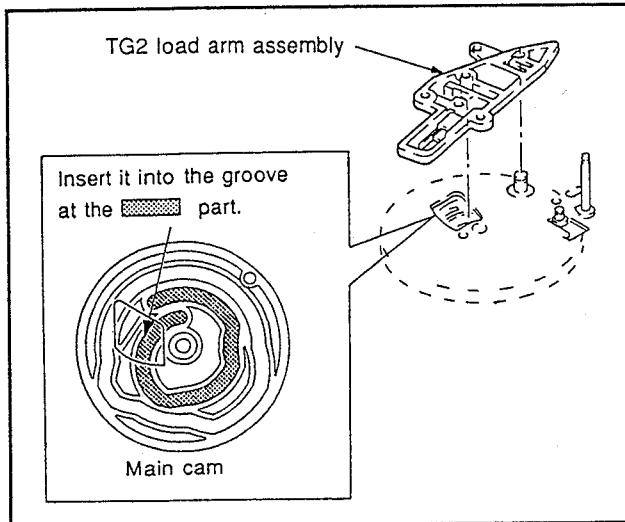
PHASE ADJUSTMENT ⑨



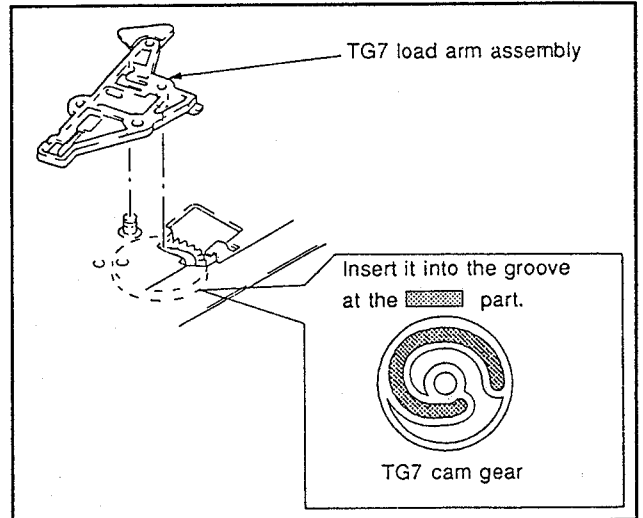
PHASE ADJUSTMENT ⑦



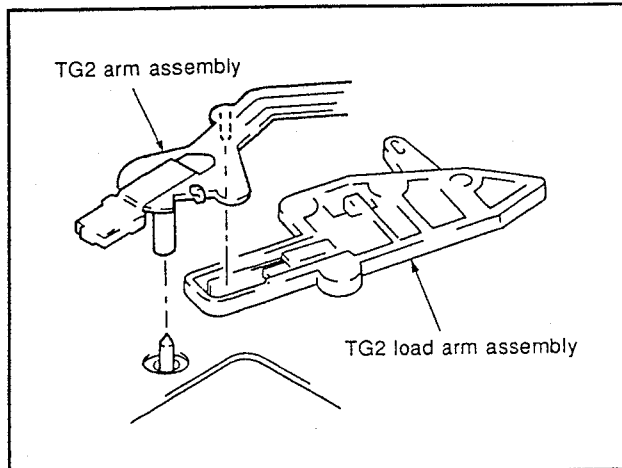
PHASE ADJUSTMENT ⑩



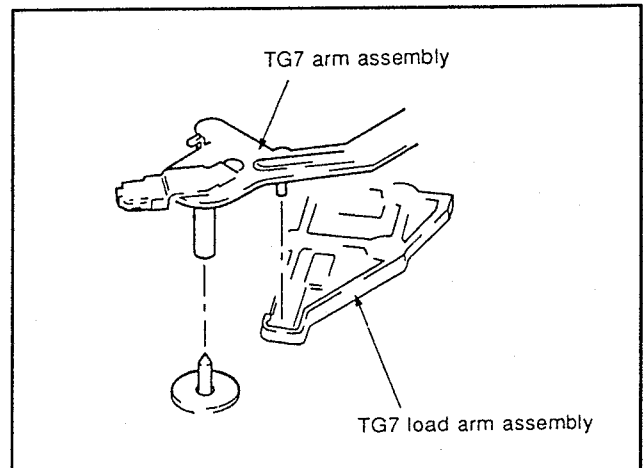
PHASE ADJUSTMENT ⑤



PHASE ADJUSTMENT ⑮



PHASE ADJUSTMENT ⑩



5-1-4. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks not only to fully display the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regardless of the length of use.

4-1. CLEANING OF ROTARY DRUM ASSEMBLY

- 1) Press a wiping cloth (Ref No. J-2) moistened with cleaning fluid (Ref No. J-1) against the rotary drum assembly gently, and clean it while rotating the upper rotary drum assembly slowly with your finger in the counterclockwise direction.

Note: Do not rotate the motor on power or rotate the upper rotary drum assembly in the clockwise direction with your finger. The head tip will also be damaged if the wiping cloth is moved perpendicularly against it. Therefore, be sure to follow the above instructions when cleaning the rotary drum assembly.

4-2. CLEANING OF TAPE PATH SYSTEM (See Fig. 1.)

- 1) In the EJECT mode, clean the tape path systems (TG-1, 2, 3, 4, 5, 6, 7, 8, capstan) and the lower drum using a superfine applicator (Ref No. J-3) moistened with cleaning fluid.

Note 1: Make sure that no oil or grease of the link mechanisms sticks to the superfine applicator (Ref No. J-3.)

Note 2: Do not use a applicator moistened with alcohol to the other guide cleaning. But clean the pinch roller using alcohol.

Note : When cleaning the tape path system, be sure to set it to the **LOADING** position. (Refer to page 5-3.)

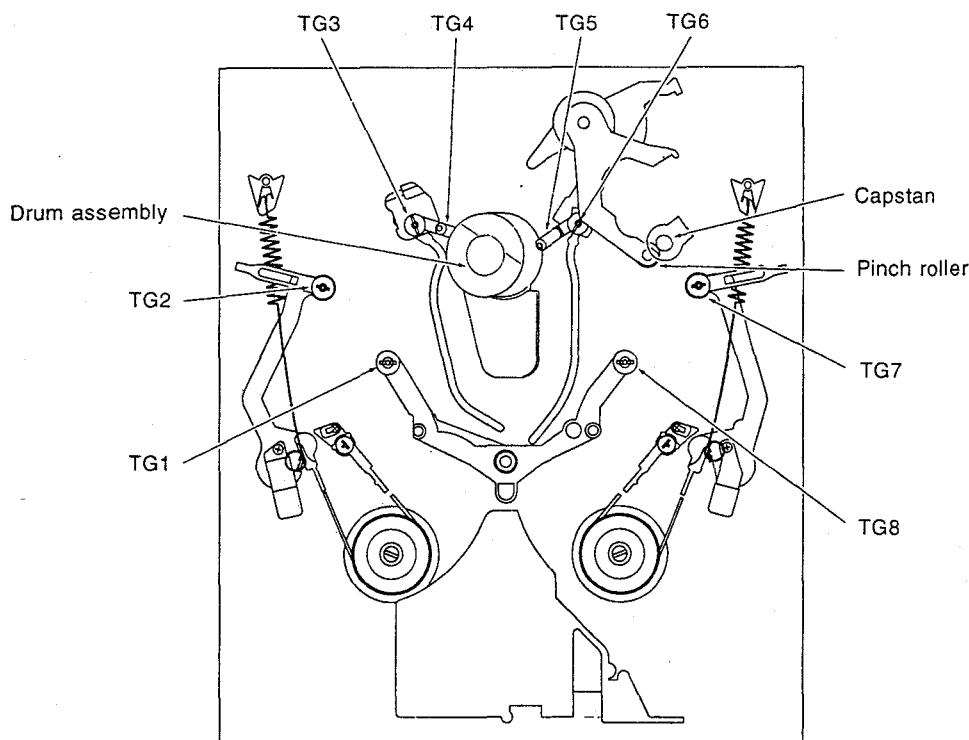


Fig. 1.

4-3. PERIODIC CHECKS

Location of Maintenance and Check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Take care not to adhere the oil.
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	
Driving System	Capstan shaft (Bearing)	—	☆	—	☆	—	☆	—	☆	—	☆	Make sure that no oil gets on the tape path surface.
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7026-007-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD } Torque measurement RVS }	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ☆ : Confirmation

Note: When overhauling, refer to the checks above and replace parts.

Note: Grease

- Be sure to use the specified the grease (The SG-055G is used all in the E mechanism). Check the quantity of grease when installing the parts which is needed to apply the grease.
- FLOIL (SG-055G): Part No. 7-651-000-09

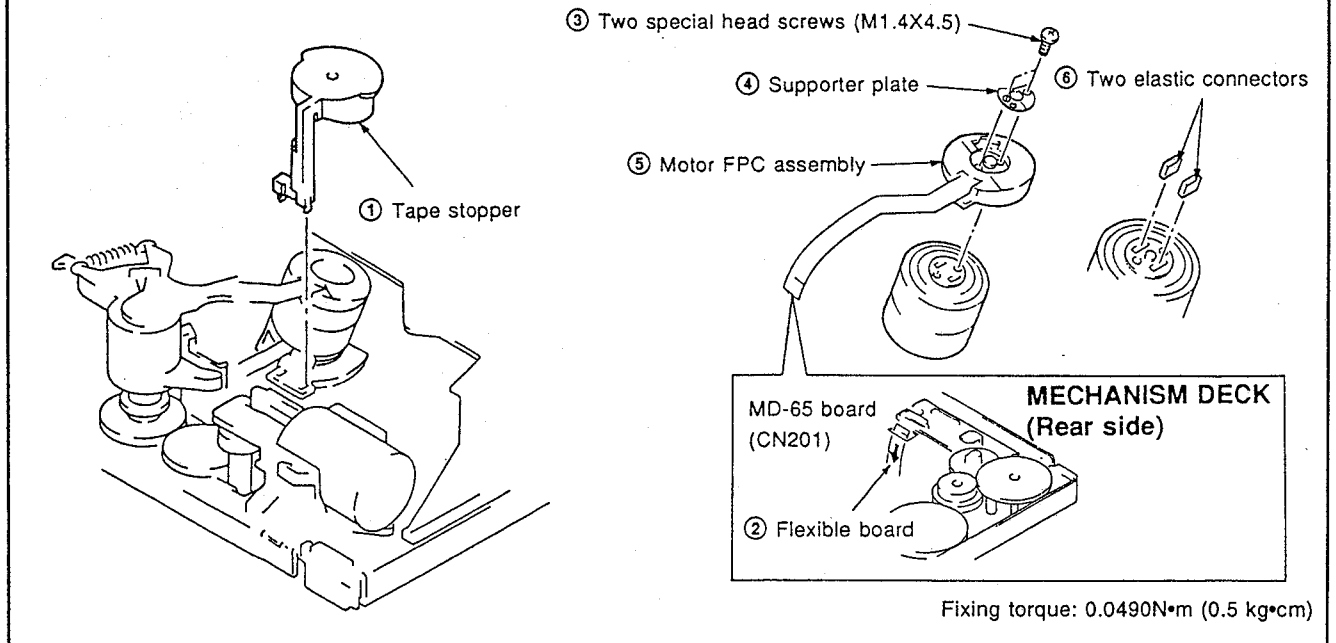
5-1-5. MECHANISM SECTION CHECKS AND REPLACEMENTS

5-1. TAPE STOPPER, MOTOR FPC ASSEMBLY AND ELASTIC CONNECTOR

• Removing/Attaching

• Removing : ① → ② → ③ → ④ → ⑤ → ⑥

• Attaching : ⑥ → ⑤ → ④ → ③ → ② → ① → Adjust them according to the flow chart (START-3) on page 5-43.

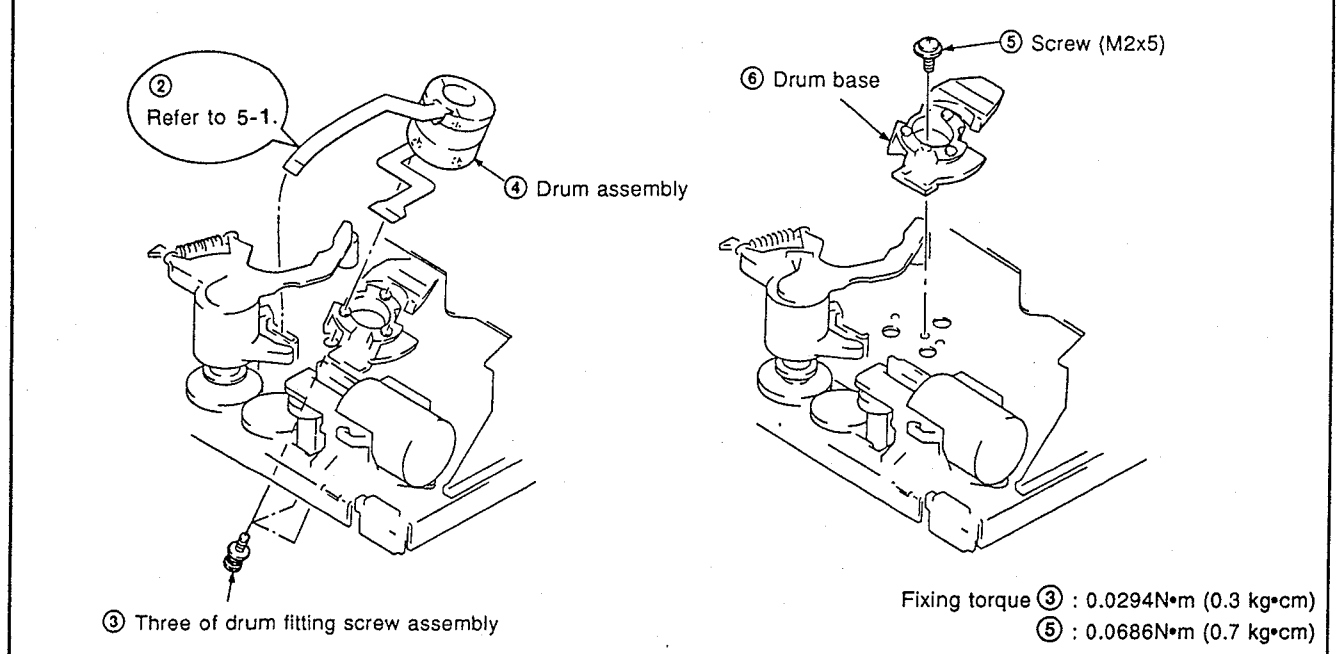


5-2. DRUM ASSEMBLY AND DRUM BASE

• Removing/Attaching

• Removing : ① Tape stopper (Refer to 5-1.) → ② → ③ → ④ → ⑤ → ⑥

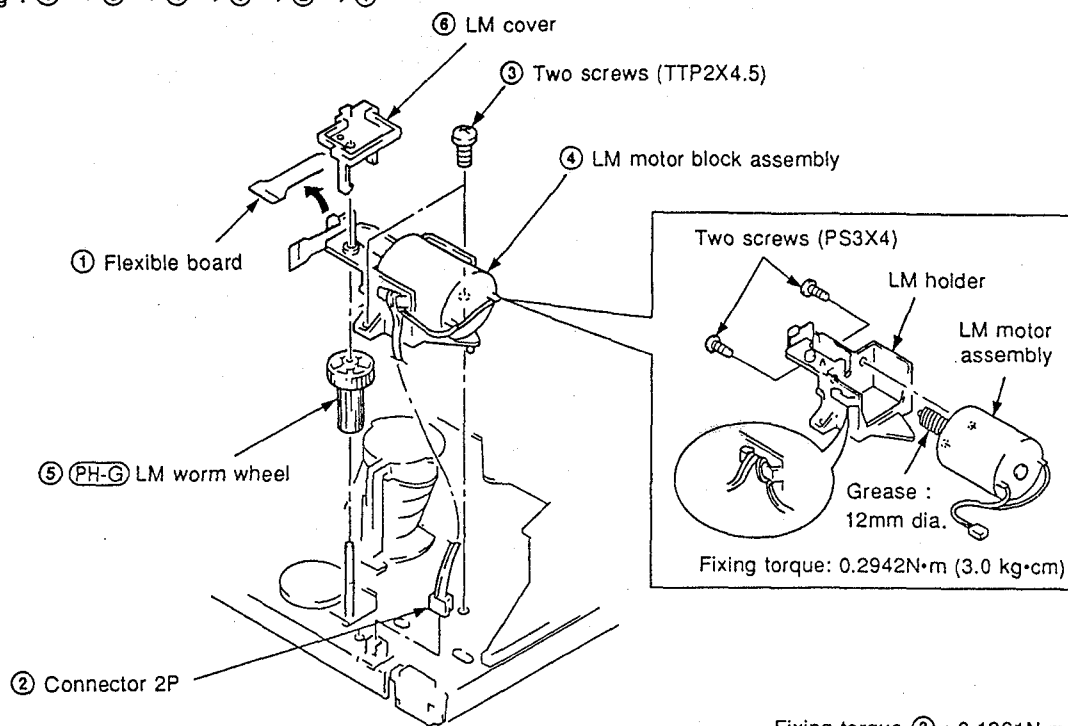
• Attaching : ⑥ → ⑤ → ④ → ③ → ② → ① → Adjust them according to the flow chart (START-3) on page 5-43.



5-3. LM COVER, LM WORM WHEEL, LM HOLDER AND LM MOTOR ASSEMBLY

• Removing/Attaching

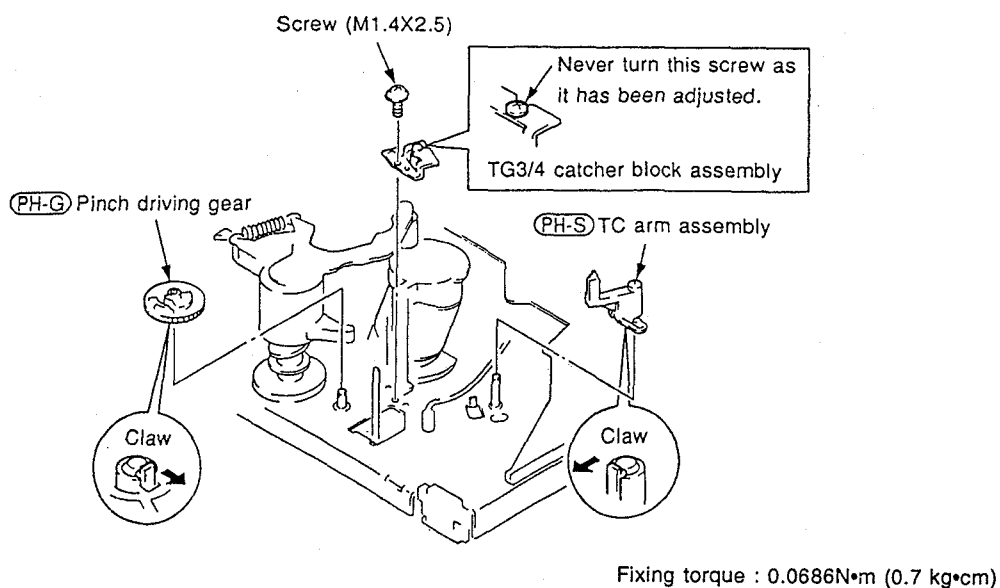
- Removing : ① → ② → ③ → ④ → ⑤ → ⑥
- Attaching : ⑥ → ⑤ → ④ → ③ → ② → ①



5-4. TG3/4 CATCHER BLOCK ASSEMBLY, PINCH DRIVING GEAR AND TC ARM ASSEMBLY

• Removing/Attaching

- Removing : After removing the LM motor assembly (Refer to 5-3.), remove each part.
- Attaching : After attaching each part and the LM motor block assembly, adjust them according to the flow chart (START-3) on page 5-43. (Only when the TG3/4 catcher block assembly is removed.)

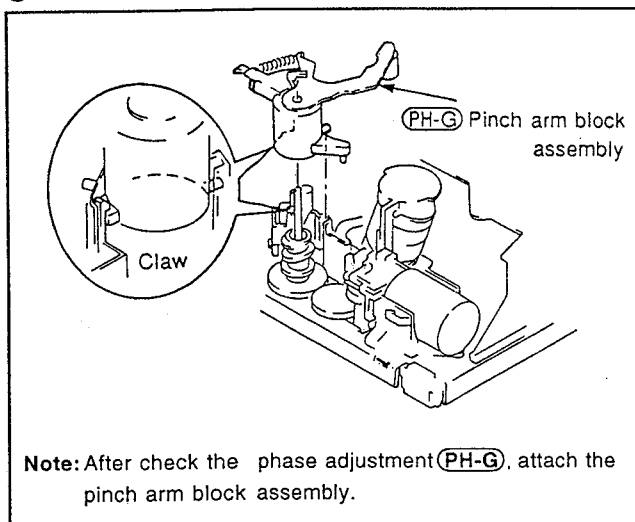


5-5. PINCH ARM ASSEMBLY, PINCH LIMITER AND TENSION COIL SPRING (PINCH)

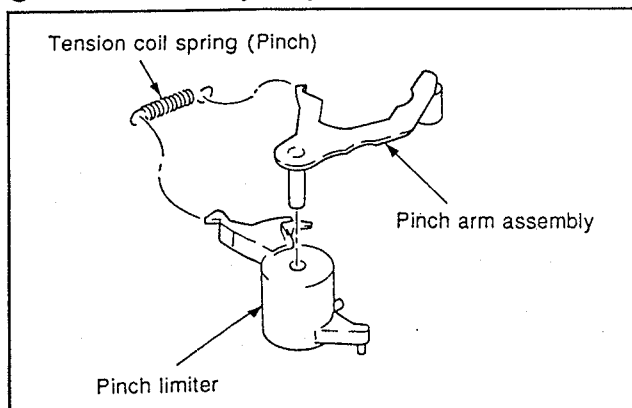
1. Removing

①. Set the **UNLOADING** position. (Refer to page 5-3.)

②. Pinch arm block assembly.



③. Pinch arm assembly and pinch limiter.



2. Attaching

①. Attach the parts in the order of ① → ③ → ②.

②. Adjust them according to the flow chart (START-3) on page 5-43.

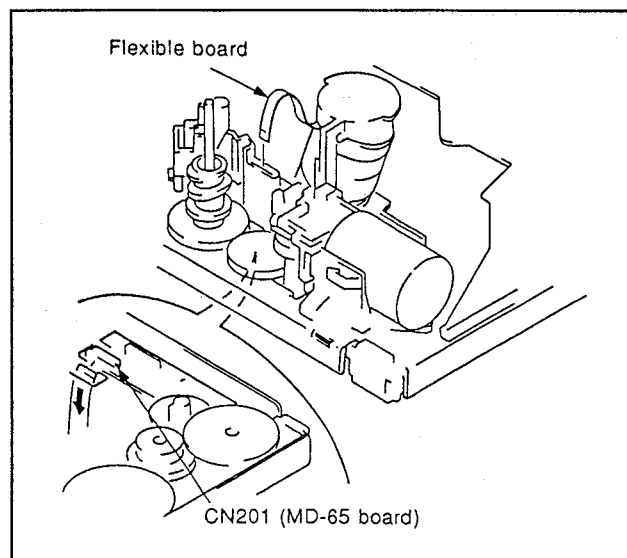
5-6. HC ARM, HC ROLLER ASSEMBLY, PINCH RETAINER, PINCH CAM GEAR AND TG5/6 CATCHER BLOCK ASSEMBLY

1. Removing

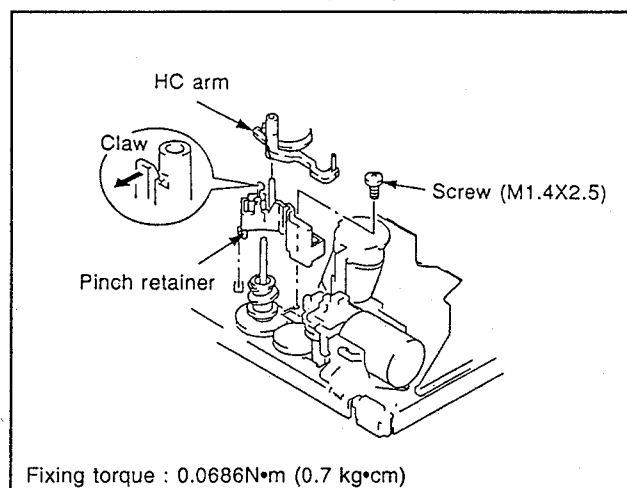
①. Set the **UNLOADING** position. (Refer to page 5-3.)

②. Pinch arm block assembly. (Refer to 5-5.)

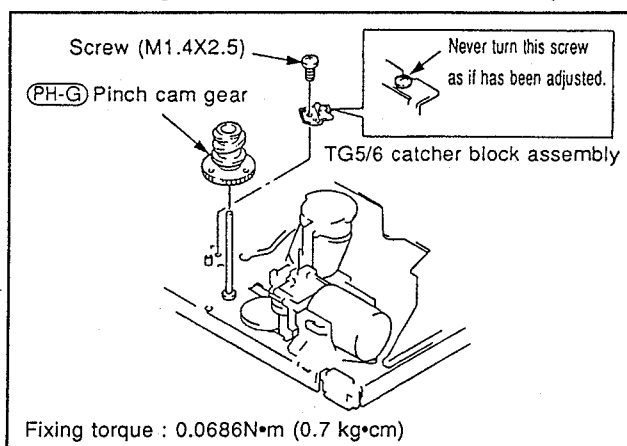
③. Flexible board.



④. HC arm, HC roller assembly and pinch retainer.



⑤. Pinch cam gear and TG5/6 catcher block assembly.



2. Attaching

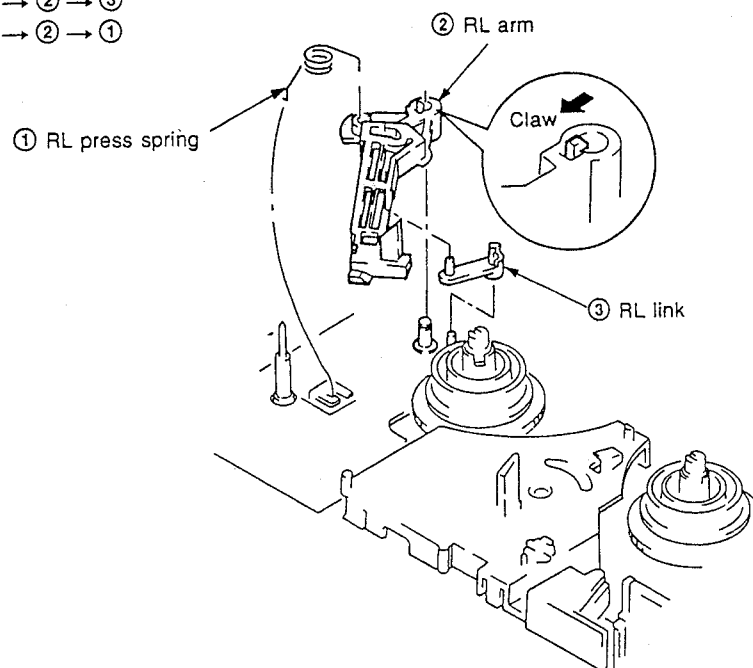
①. Attach the parts in the order of ① → ⑤ → ④ → ③ → ②.

②. Adjust them according to the flow chart (START-3) on page 5-43.

5-7. RL ARM AND RL LINK

- Removing/Attaching (**L cassette**) position. (Refer to page 5-2.)

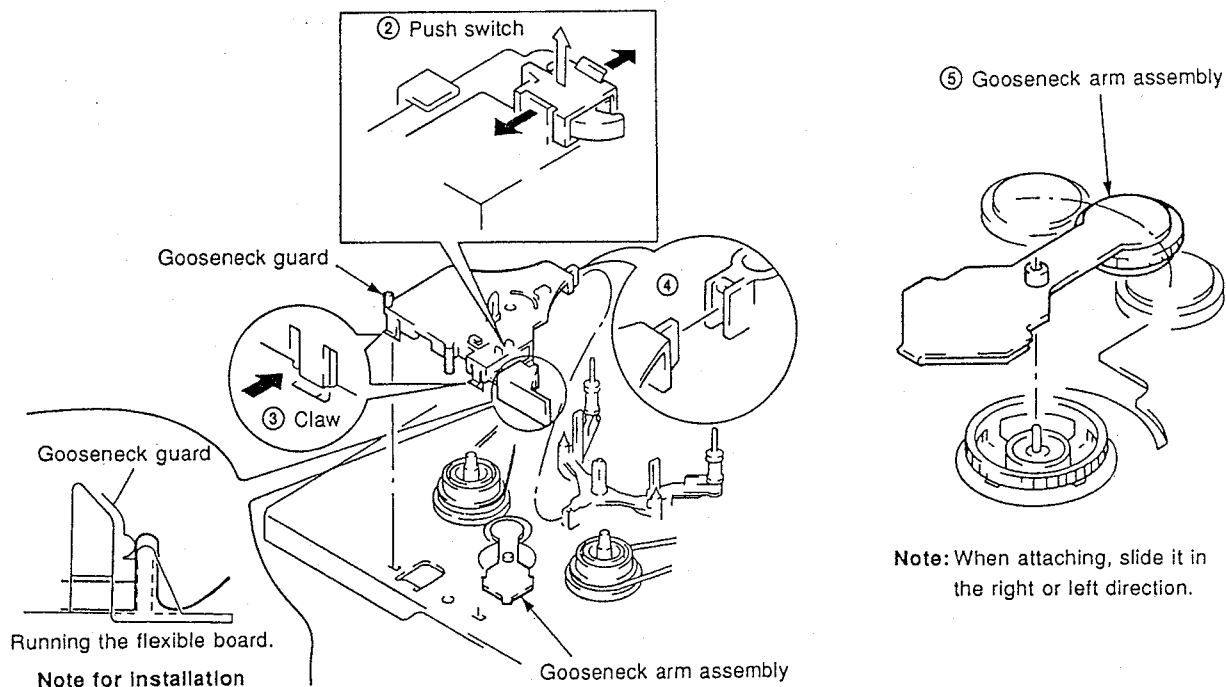
- Removing : ① → ② → ③
- Attaching : ③ → ② → ①



5-8. GOOSENECK GUARD AND GOOSENECK ARM ASSEMBLY

- Removing/Attaching (**L cassette**) position. (Refer to page 5-2.)

- Removing : ① Remove the RL arm. (Refer to 4-7.) → ② → ③ → ④ → ⑤
- Attaching : ⑤ → ④ → ③ → ② → ①

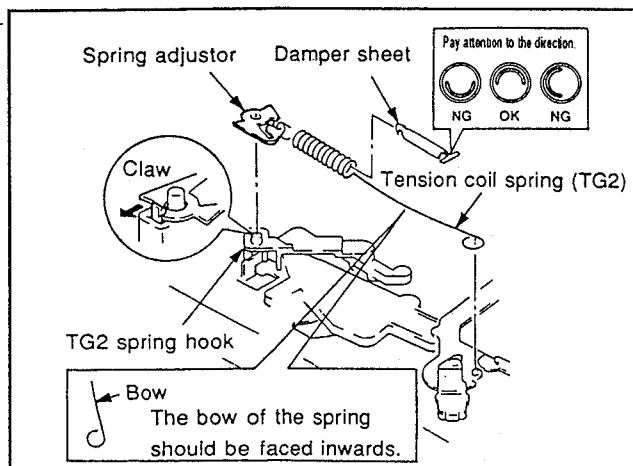


5-9. TENSION COIL SPRING (TG2), SPRING ADJUSTOR, TG2 SPRING HOOK, TG2 SELECTION ARM AND DAMPER SHEET

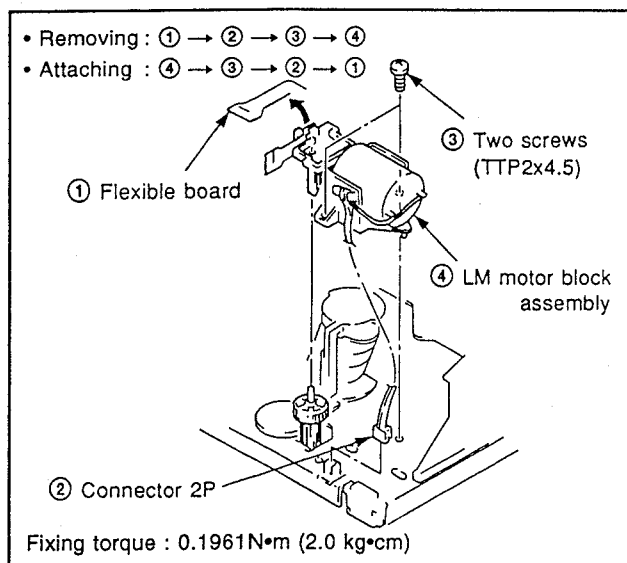
1. Removing

①. Set the **UNLOADING** position. (Refer to page 5-3.)

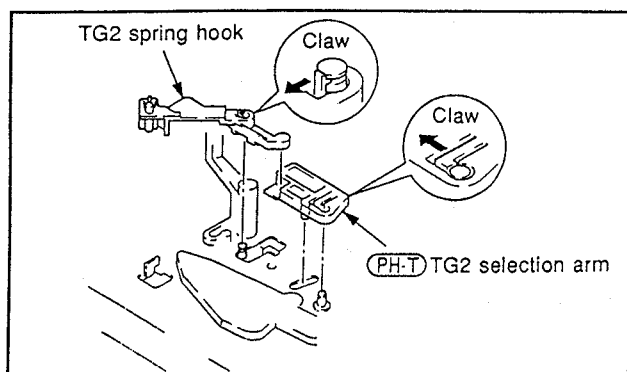
②. Tension coil spring (TG2) and spring adjustor.



③. LM motor block assembly.



④. TG2 spring hook and TG2 selection arm.



2. Attaching

①. Attach the parts in the order of ① → ④ → ② → ③.

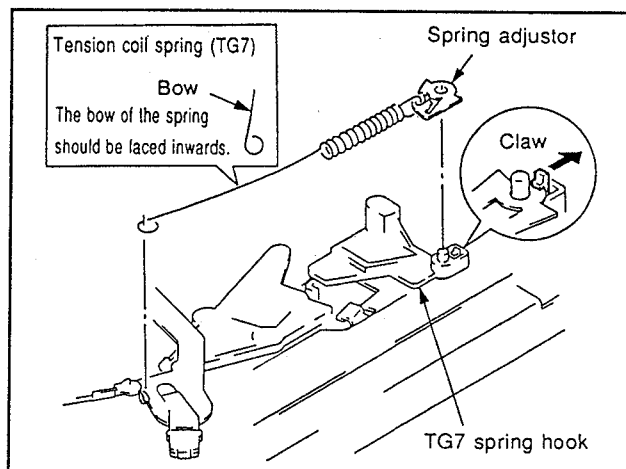
②. Adjust them according to the flow chart (START-2) on page 5-43.

5-10. TENSION COIL SPRING (TG7), SPRING ADJUSTOR AND TG7 SPRING HOOK

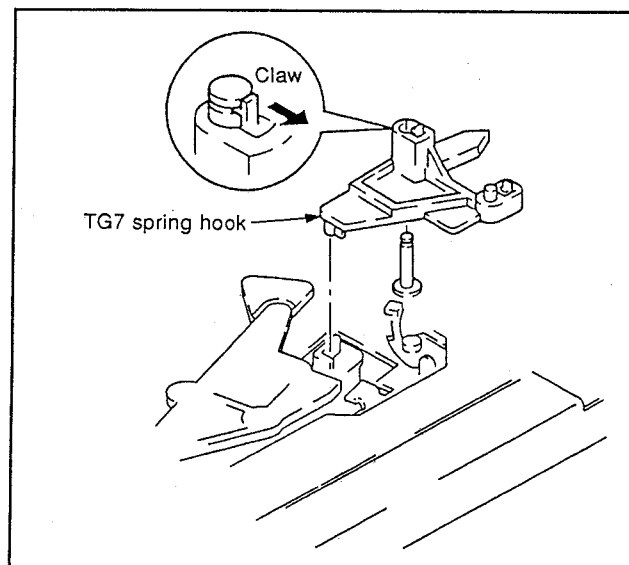
1. Removing

①. Set the **UNLOADING** position. (Refer to page 5-3.)

②. Tension coil spring (TG7) and spring adjustor.



③. TG7 spring hook.



2. Attaching

①. Attach the parts in the order of ① → ③ → ②.

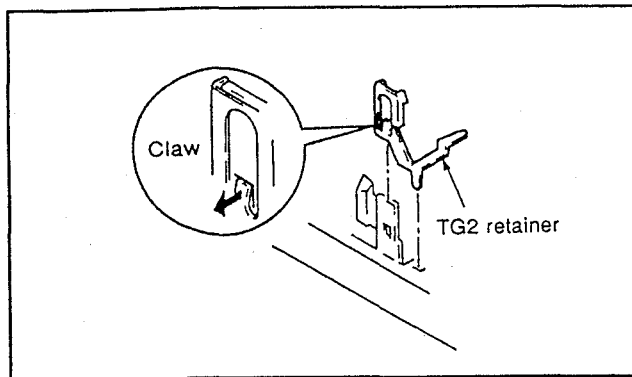
②. Adjust them according to the flow chart (START-2) on page 5-43.

5-11. TG2 RETAINER, TG2 ARM ASSEMBLY (TG2 PLATE SPRING AND ET MAGNET) S TENSION REGULATOR BAND ASSEMBLY AND TG2 LOAD ARM ASSEMBLY

1. Removing

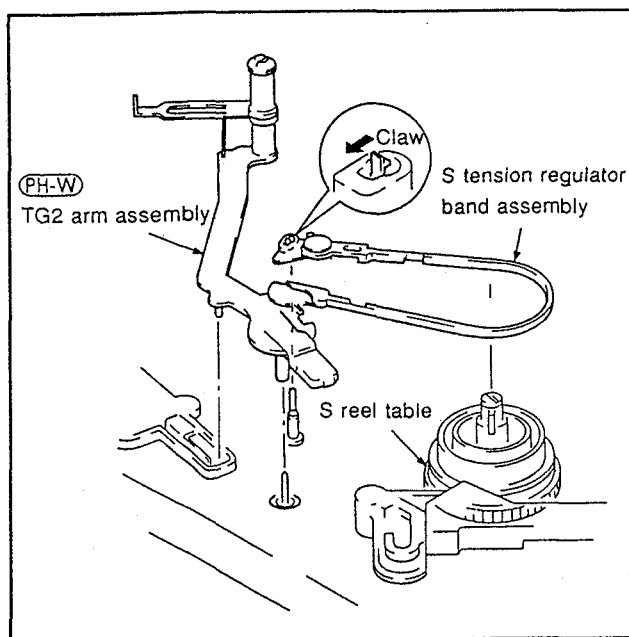
①. Tension coil spring (TG2), spring adjustor, LM motor block assembly and TG2 spring hook. (Refer to 5-9.)

②. TG2 retainer.

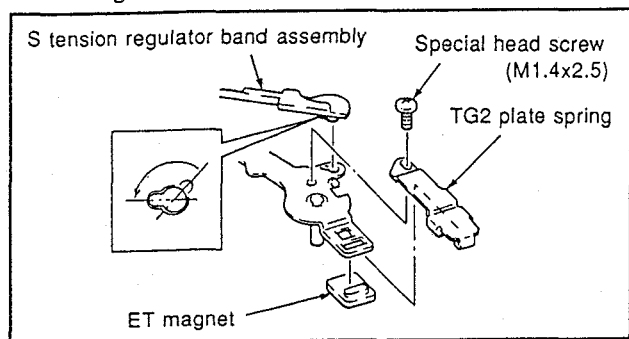


③. Set the **LOADING** position. (Refer to page 5-3.)

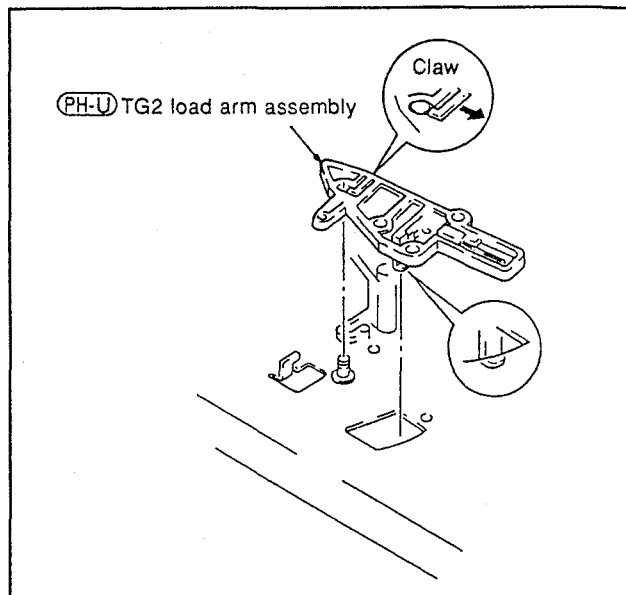
④. TG2 arm assembly and S tension regulator band assembly.



⑤. S tension regulator band assembly, TG2 plate spring and ET magnet.



⑥. TG2 load arm assembly.



2. Attaching

①. Set the **UNLOADING** position. (Refer to page 5-3.)

②. Attach the parts in the order of ⑥ → ③ → ⑤ → ④ → ② → ①.

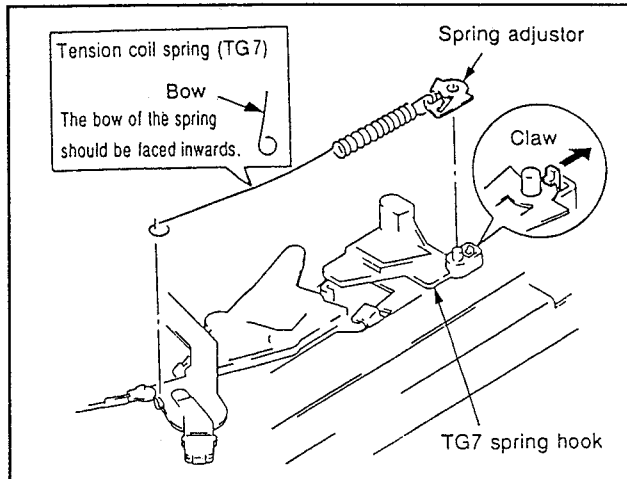
③. Operation check: **LOADING** / **UNLOADING**. (Refer to page 5-3.)

④. Adjust them according to the flow chart (START-2) on page 5-43.

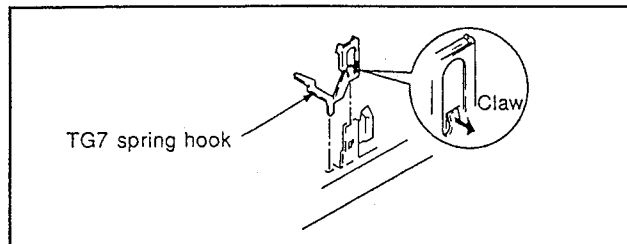
5-12. TG7 RETAINER, TG7 ARM ASSEMBLY (TG7 PLATE SPRING AND ET MAGNET) T TENSION REGULATOR BAND ASSEMBLY AND TG7 LOAD ARM ASSEMBLY

1. Removing

①. Tension coil spring (TG7), spring adjuster.

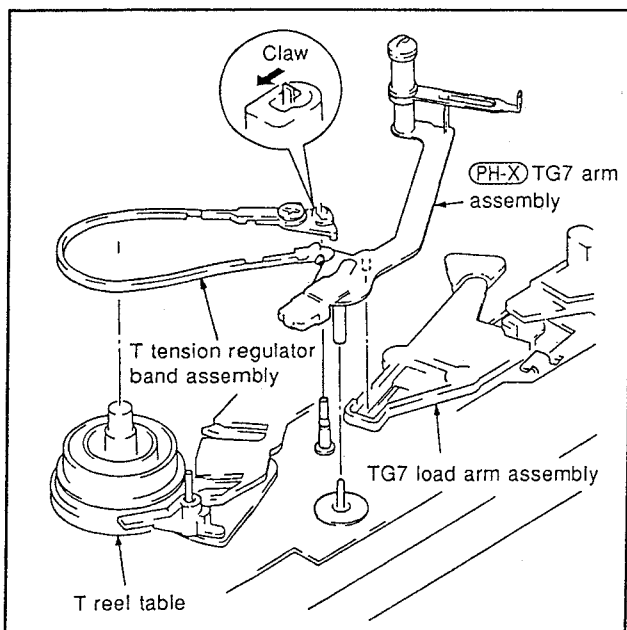


②. TG7 spring hook.

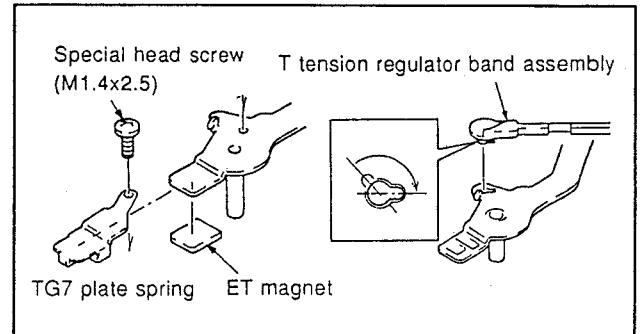


③. Set the **LOADING** position. (Refer to page 5-3.)

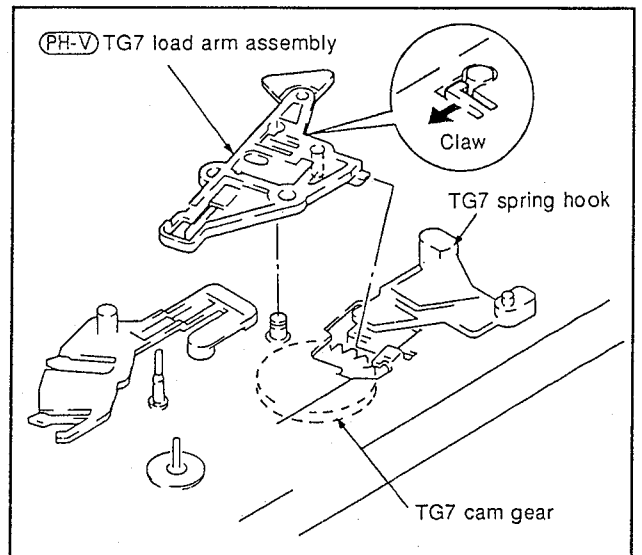
④. TG7 arm assembly and T tension regulator band assembly.



⑤. TG7 plate spring, ET magnet and T tension regulator band assembly.



⑥. TG7 load arm assembly.



2. Attaching

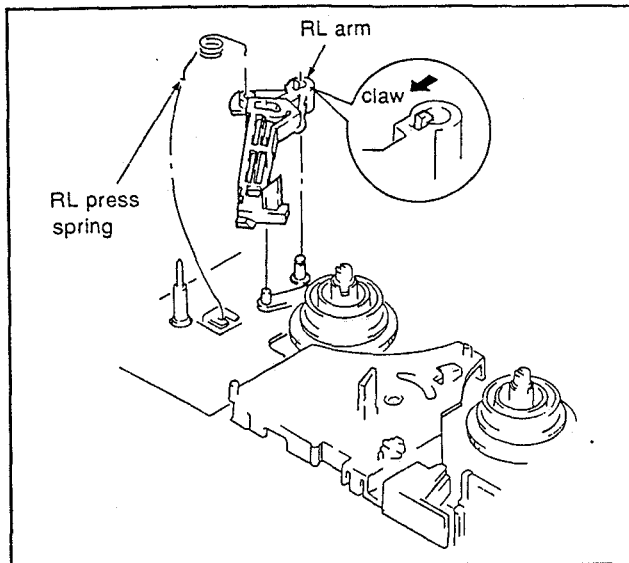
- ①. Set the **UNLOADING** position. (Refer to page 5-3.)
- ②. Attach the parts in the order of ⑥ → ③ → ⑤ → ④ → ② → ①.
- ③. Operation check: **LOADING** / **UNLOADING**. (Refer to page 5-3.)
- ④. Adjust them according to the flow chart (START-2) on page 5-43.

5-13. S REEL TABLE BLOCK ASSEMBLY

1. Removing

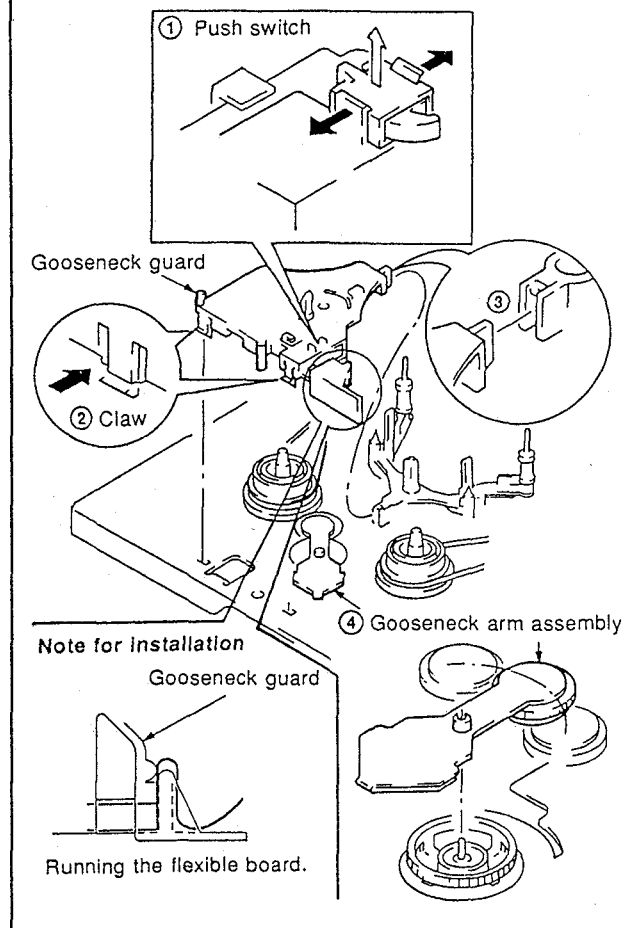
① Set the **L cassette** position. (Refer to page 5-2.)

② RL arm.

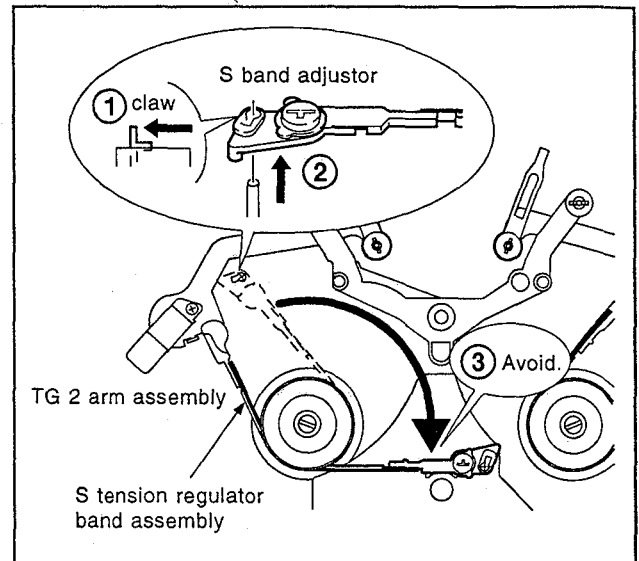


③ Gooseneck guard.

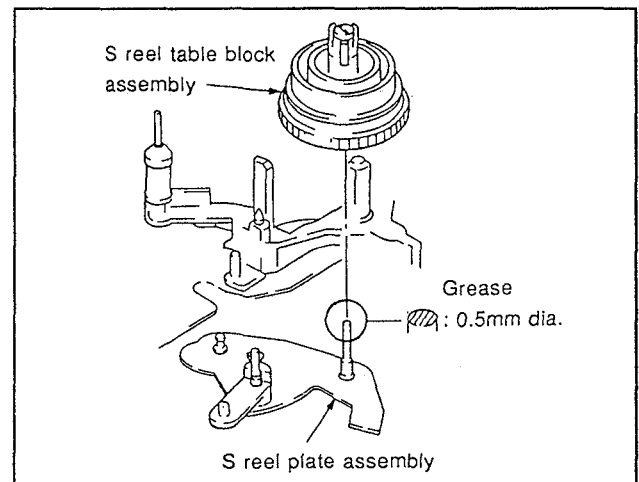
- Removing : ① → ② → ③ → ④
- Attaching : ④ → ③ → ② → ①



④ S band adjustor.



⑤ S reel table block assembly.



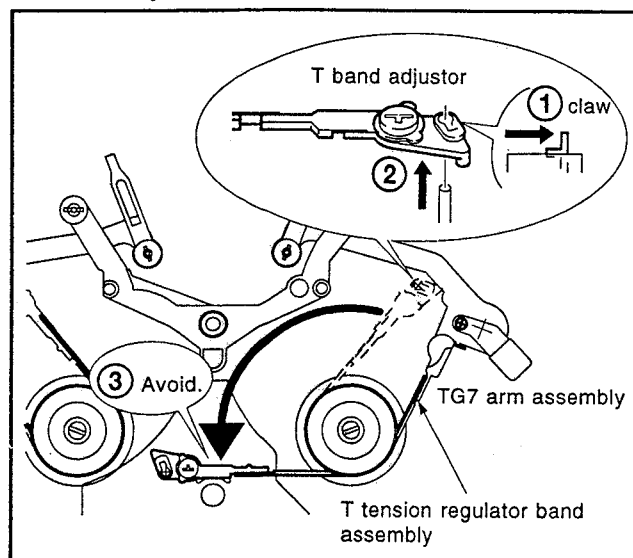
2. Attaching

- ① Attach the parts in the order of ① → ⑤ → ④ → ③ → ②.
- ② Adjust them according to the flow chart (START-1) on page 5-43

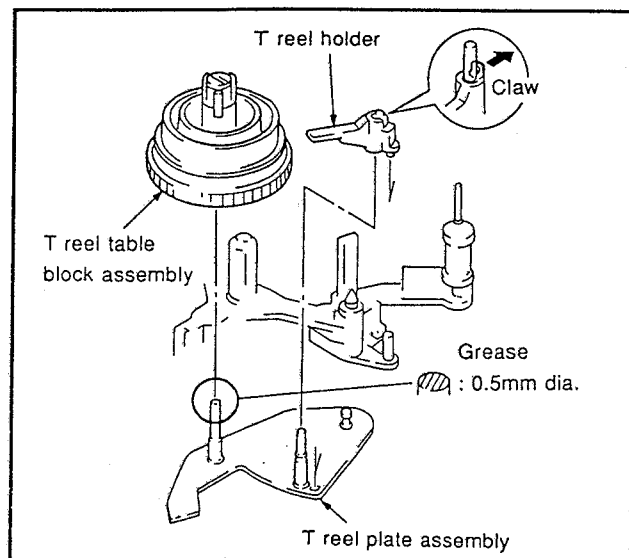
5-14. T REEL HOLDER AND T REEL TABLE BLOCK ASSEMBLY

1. Removing

- ①. Set the **L cassette** position. (Refer to page 5-2.)
- ②. T band adjustor.



- ③. T reel holder and T reel table block assembly.



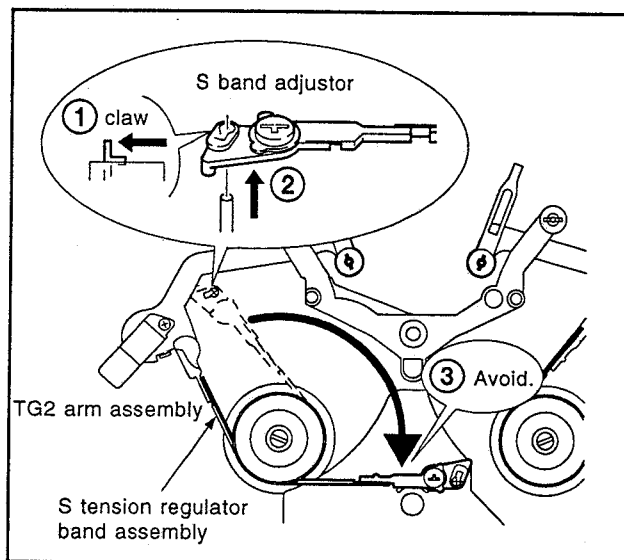
2. Attaching

- ①. Attach the parts in the order of ① → ③ → ②.
- ②. Adjust them according to the flow chart (START-1) on page 5-43.

5-15. S REEL PLATE ASSEMBLY

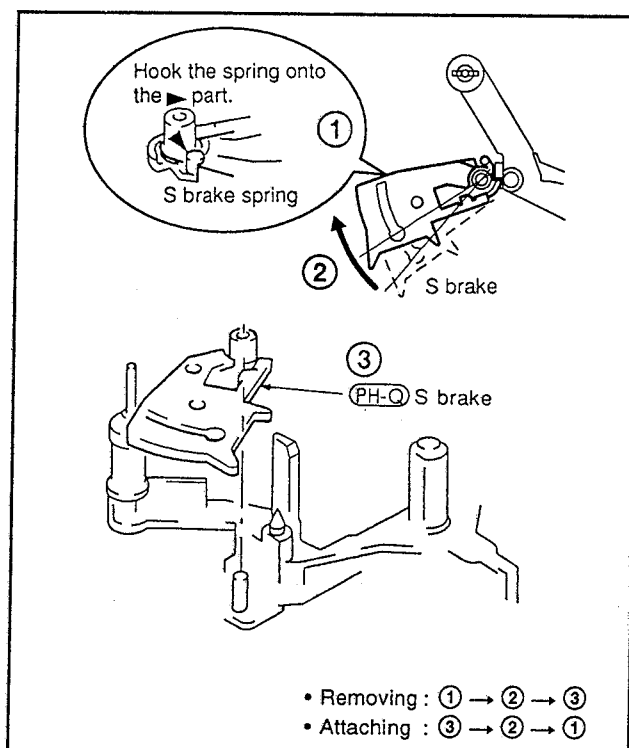
1. Removing

- ①. Set the **L cassette** position. (Refer to page 5-2.)
- ②. S band adjustor.

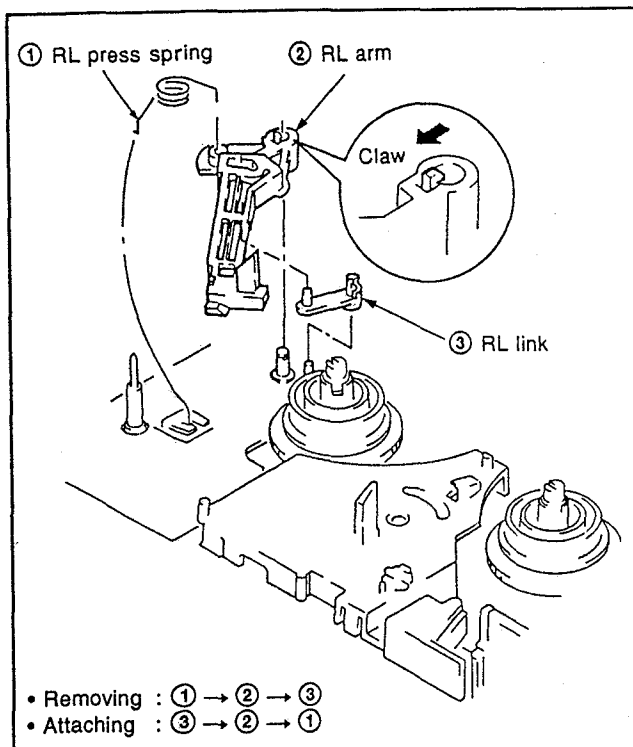


- ③. Set the **LOADING** position. (Refer to page 5-3.)

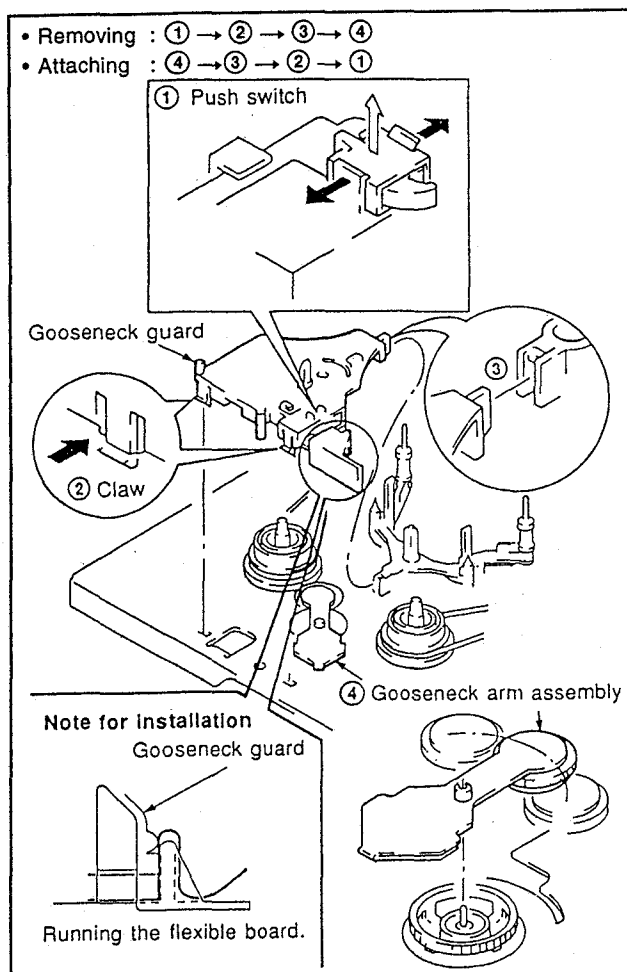
- ④. S brake.



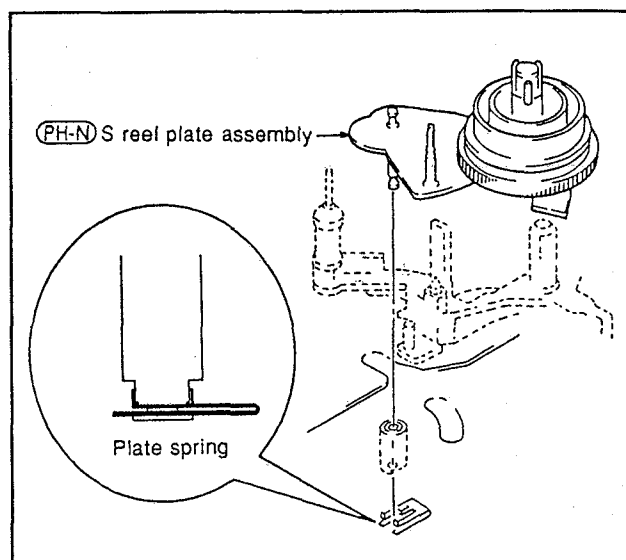
⑤. RL arm and RL link.



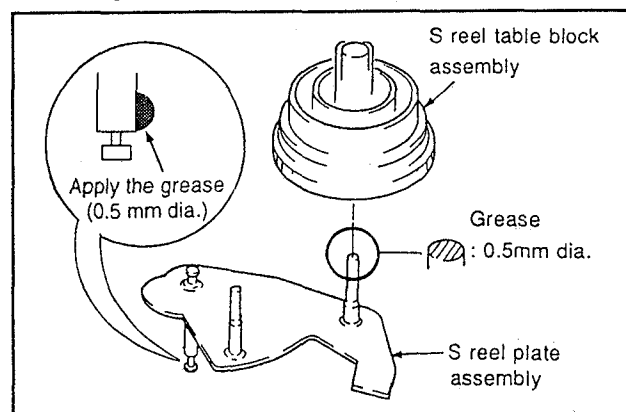
⑥. Gooseneck guard.



⑦. Plate spring.



⑧. S reel plate assembly.



2. Attaching

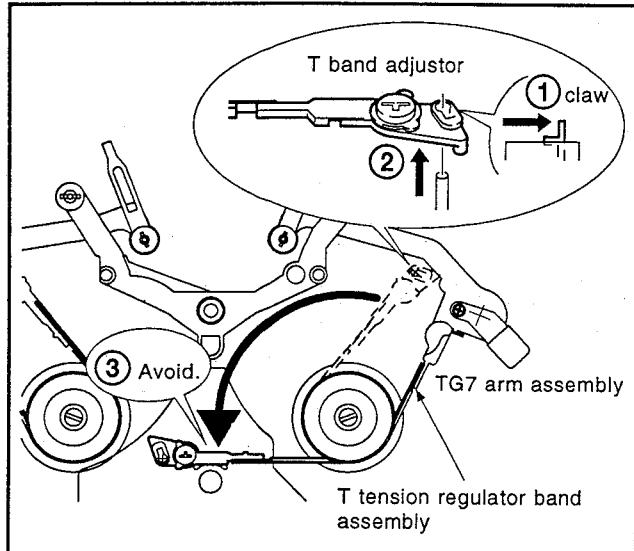
1. Attach the parts in the order of ① → ⑧ → ⑦ → ④ → ③ → ② → ⑥ → ⑤.
2. Adjust them according to the flow chart (START-1) on page 5-43.

5-16. T REEL PLATE ASSEMBLY

1. Removing

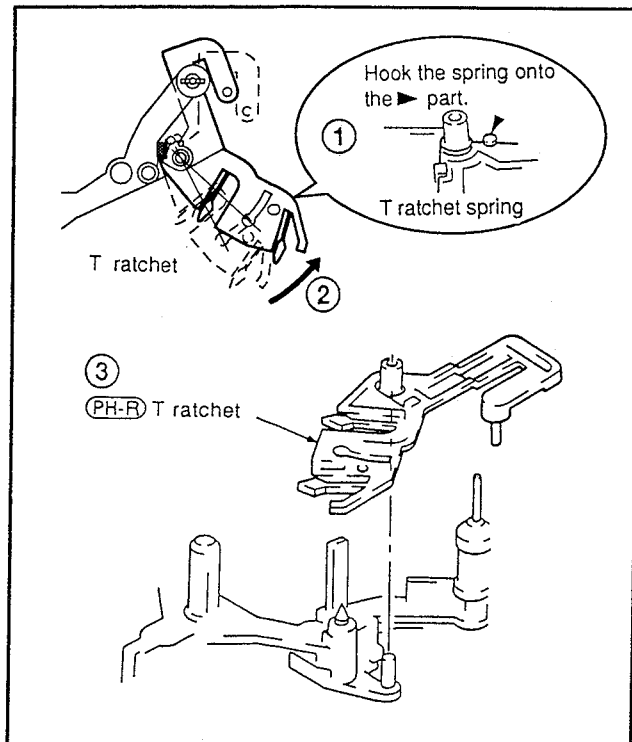
①. Set the **(L cassette)** position. (Refer to page 5-2.)

②. T band adjustor.

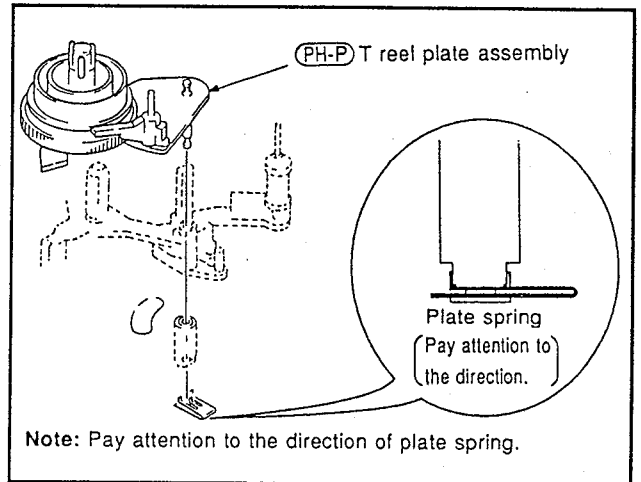


③. Set the **(LOADING)** position. (Refer to page 5-3.)

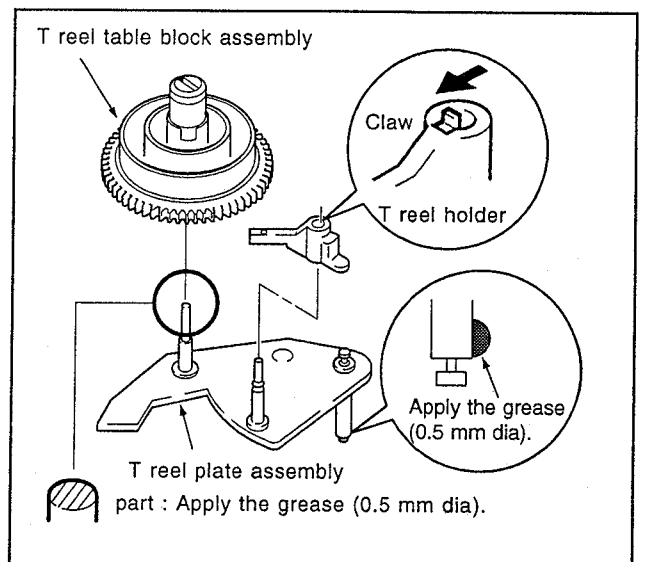
④. T ratchet.



⑤. Plate spring.



⑥. T reel plate assembly.



2. Attaching

①. Attach the parts in the order of ① → ⑥ → ⑤ → ③ → ④

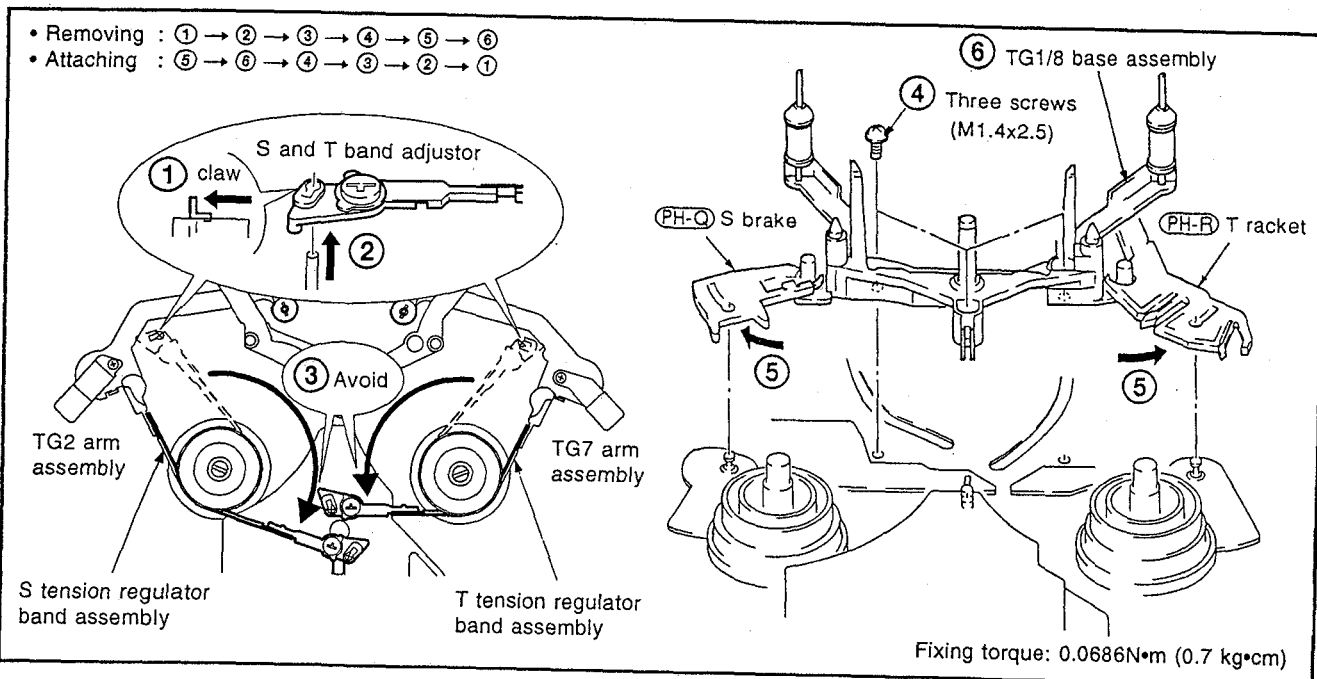
②. Adjust them according to the flow chart (START-1) on page 5-43.

5-17. TG1/8 BASE ASSEMBLY, S BRAKE AND T RATCHET

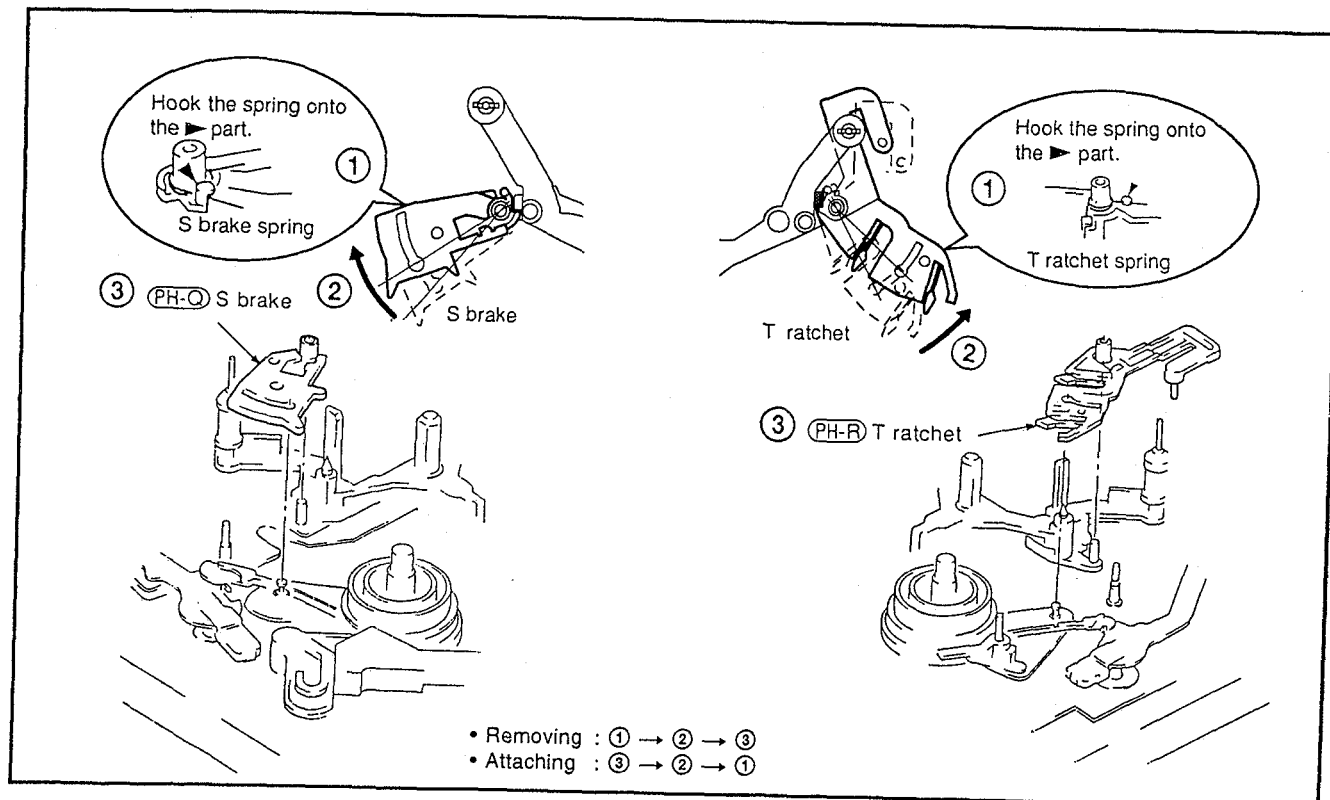
1. Removing

①. Set the **LOADING** / **L cassette** positions. (Refer to pages 5-2 to 5-3.)

②. TG1/8 base assembly.



③. S brake and T ratchet.



2. Attaching

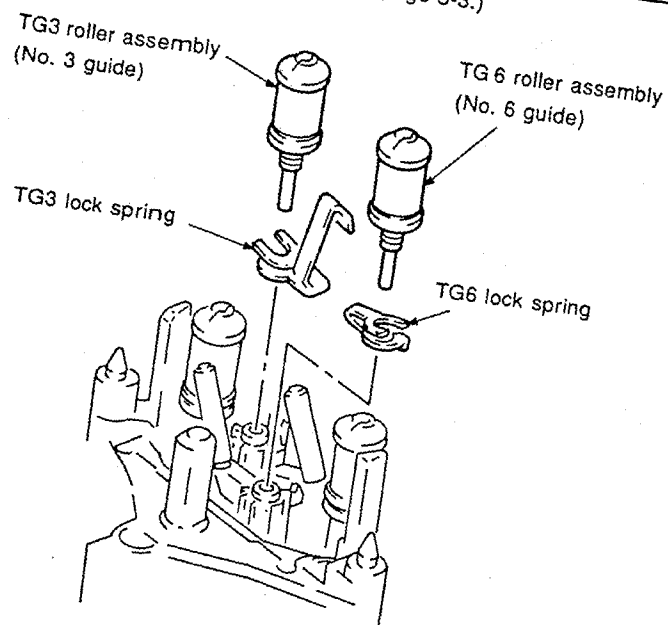
①. Attach the parts in the order of ① → ③ → ②.

②. Adjust them according to the flow chart (START-2) on page 5-43.

5-18. TG3/6 ROLLER ASSEMBLY AND TG3/6 LOCK SPRING

• Removing/Attaching

Note: **UNLOADING** position. (Refer to page 5-3.)



Note: After attaching each part, adjust them according to the flow chart (START-3) on page 5-43.

5-19. FL JOINT GEAR, TG5/6 RETAINER AND CAPSTAN MOTOR

• Removing/Attaching

- Removing : ① → ② → ③ → ④ → ⑤ → ⑥
- Attaching : ⑥ → ⑤ → ④ → ③ → ② → ①

① Stopper washer (1.5)

② FL joint gear

③ Screw (M1.4x2.5)

④ TG5/6 retainer

⑥ Capstan motor

⑤ Screw (PS2x4)

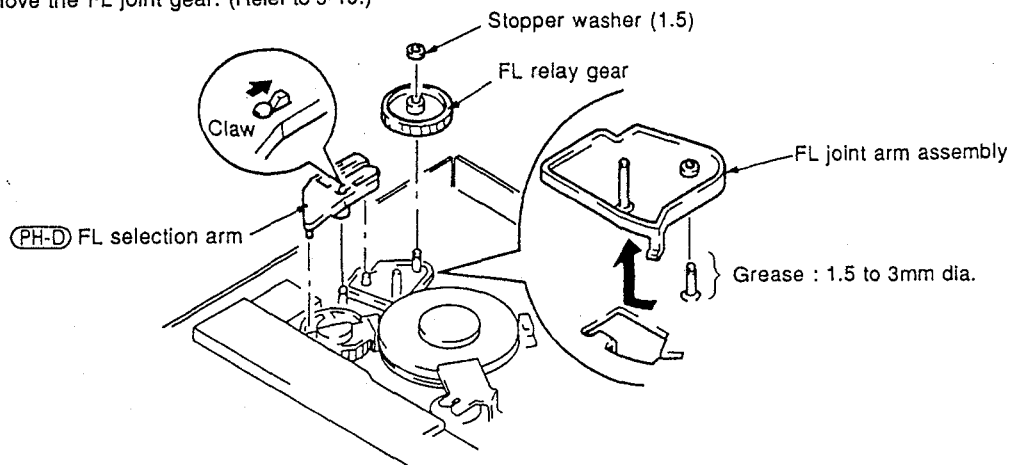
Fixing torque ③: 0.0686N·m (0.7 kg·cm)

Fixing torque ⑤: 0.1961N·m (2.0 kg·cm)

5-20. FL SELECTION ARM, FL RELAY GEAR AND FL JOINT ARM ASSEMBLY

• Removing/Attaching

Note: First, remove the FL joint gear. (Refer to 5-19.)

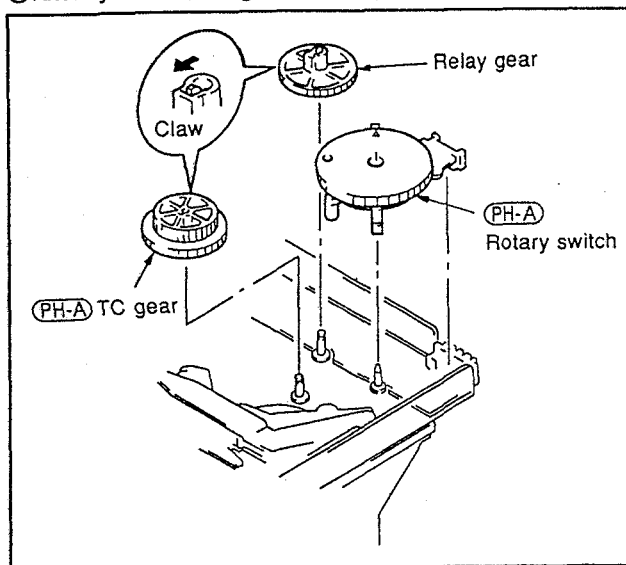


5-21. ROTARY SWITCH, TC GEAR AND RELAY GEAR

1. Removing

① Set the **UNLOADING** position. (Refer to page 5-3.)

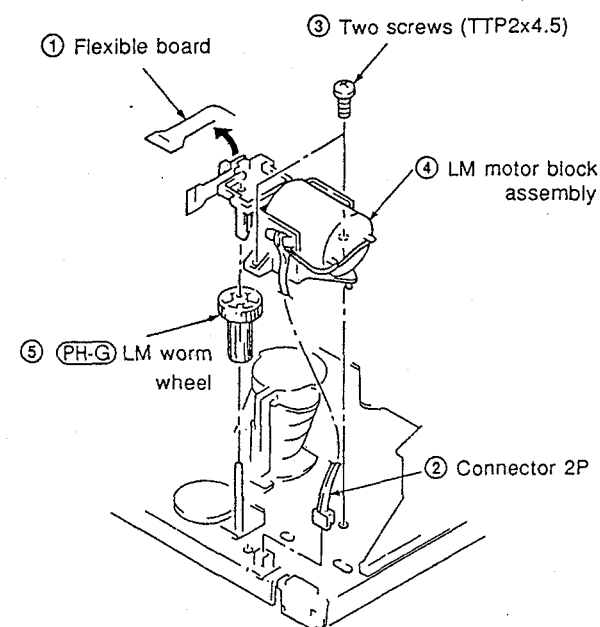
② Rotary switch, TC gear and relay gear.



2. Attaching

① Remove the LM motor block assembly and LM worm wheel. (To synchronize phase of the pinch driving system (front side) and the loading driving system (back side)).

- Removing : ① → ② → ③ → ④ → ⑤
- Attaching : ⑤ → ④ → ③ → ② → ①



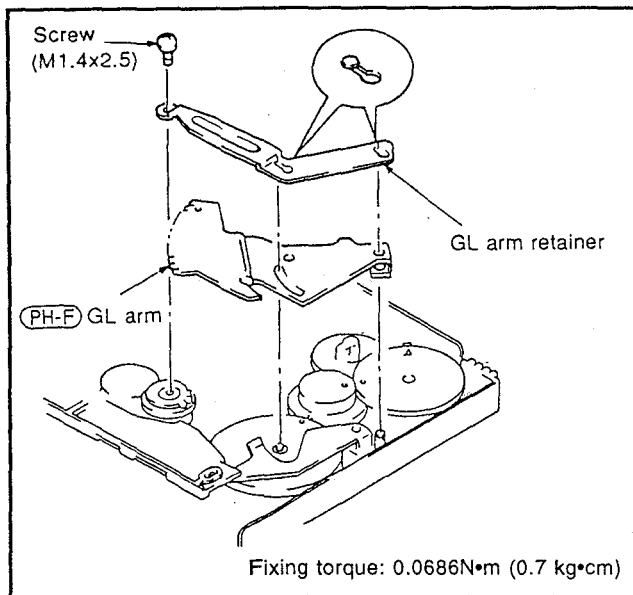
Fixing torque: 0.1961N•m (2.0 kg•cm)

② Attach the TC gear, relay gear and rotary switch.

③ Attach the LM worm wheel and LM motor block assembly.

5-22. GL ARM RETAINER AND GL ARM

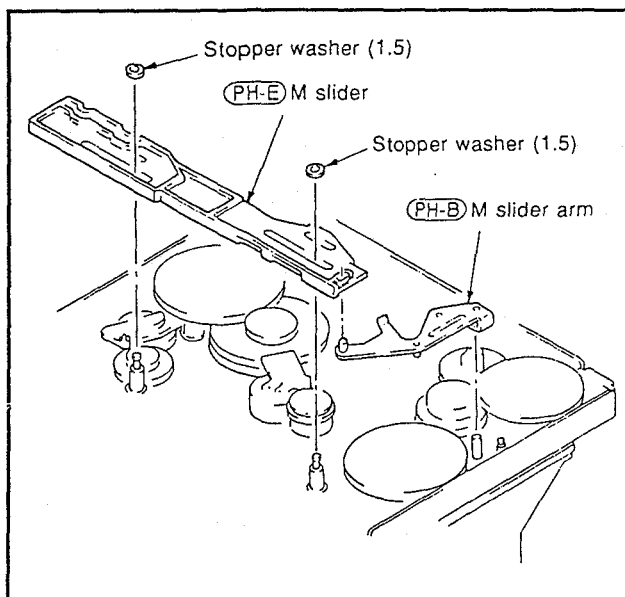
- **Removing/Attaching** (**UNLOADING**) position. (Refer to page 5-3.)



5-23. M SLIDER AND M SLIDER ARM

1. Removing

- ① Set the **UNLOADING** position. (Refer to page 5-3.)
- ② GL arm retainer and GL arm. (Refer to 5-22.)
- ③ M slider and M slider arm.



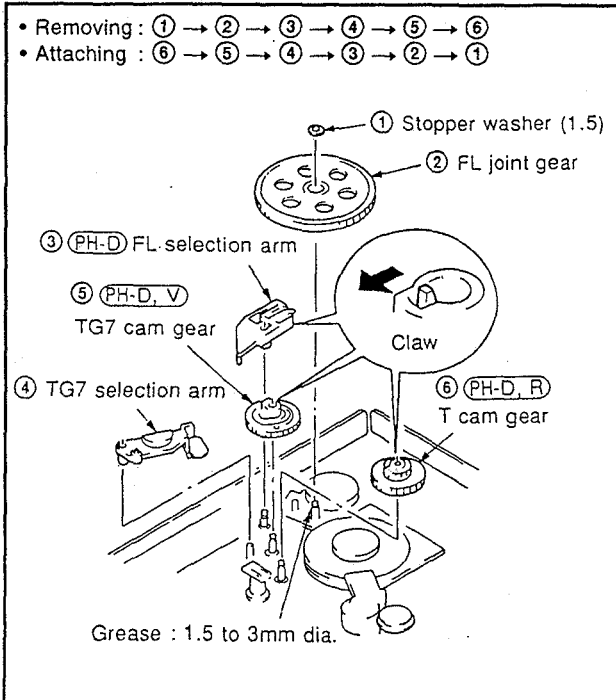
2. Attaching

- Attach the parts in the order of ① → ③ → ②.

5-24. TG7 SELECTION ARM, TG7 CAM GEAR AND T CAM GEAR

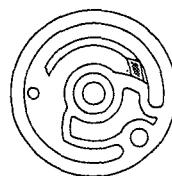
1. Removing

- ① Set the **UNLOADING** position. (Refer to page 5-3.)
- ② GL arm retainer and GL arm. (Refer to 5-22.)
- ③ M slider and M slider arm. (Refer to 5-23.)
- ④ TG7 selection arm, TG7 cam gear and T cam gear.



2. Attaching

- ① Attach the parts in the order of ① → ④ → ③ → ②.



T cam gear
(T ratchet driving side)

Cam groove on the T cam gear.

Apply the grease (3mm dia) to of cam groove (■ part).

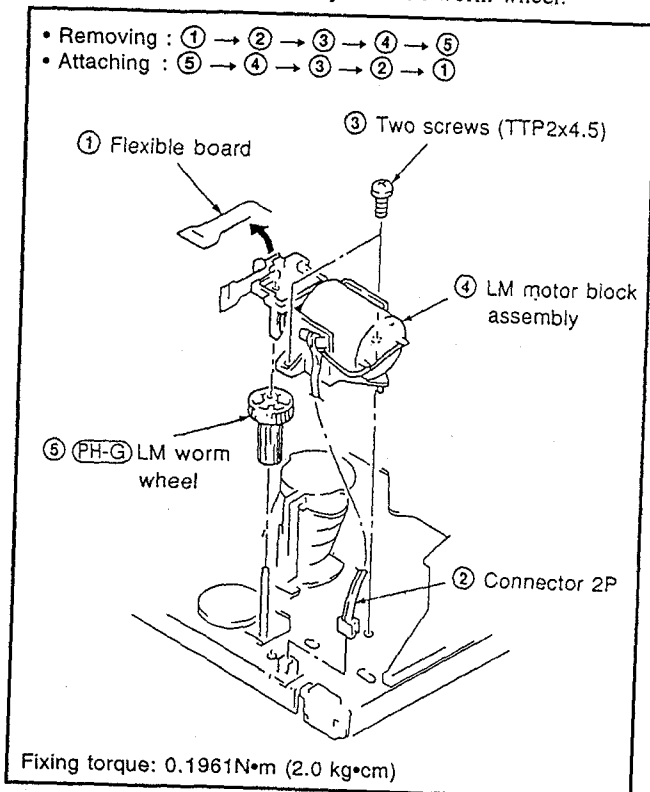
5-25. MAIN CAM, TG2 SL ARM ASSEMBLY AND TENSION COIL SPRING (TG2 SL)

The two grooves on one side of the main cam drive the TG2 selection arm and the TG2 load arm assembly. Since it is difficult to attach the main cam, fix the TG2 selection arm and the TG2 load arm assembly with the main cam's phase adjusted correctly (Nearly unloading position (See 3-1. Phase Adjustment (A): page 5-6)), so that later mounting work can be performed smoothly. If fixed parts are shifted, follow "3-3. Phase Adjustment (T, U): page 5-11".

1. Removing

①. Set the **UNLOADING** position. (Refer to page 5-3.)

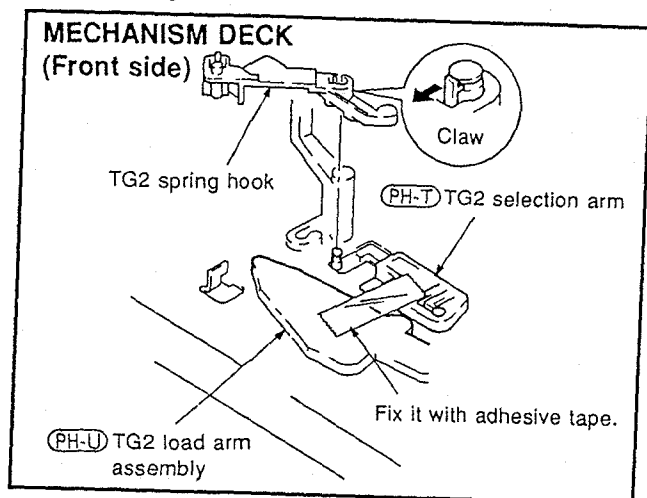
②. LM motor block assembly and LM worm wheel.



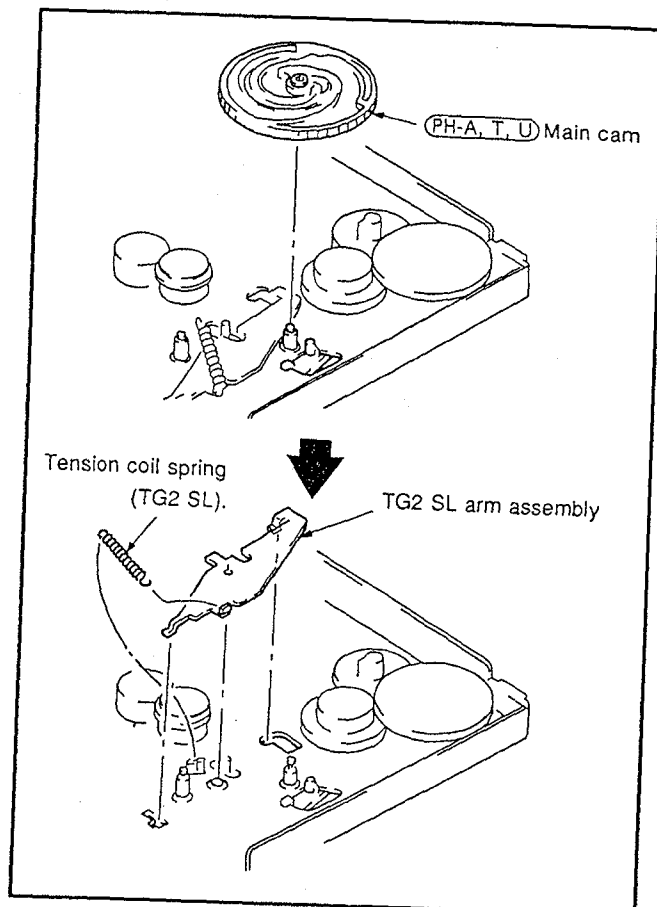
③. GL arm retainer and GL arm. (Refer to 5-22.)

④. M slider and M slider arm. (Refer to 5-23.)

⑤. TG2 spring hook.



⑥. Main cam, TG2 SL arm assembly and tension coil spring (TG2 SL).



2. Attaching

①. Attach the parts in the order of ① → ⑥ → ⑤ → ④ → ③ → ②.

②. Adjust them according to the flow chart (START-2) on page 5-43.



Cam groove on the main cam.

Apply the grease (12mm dia) to each two of cam groove (■ part).

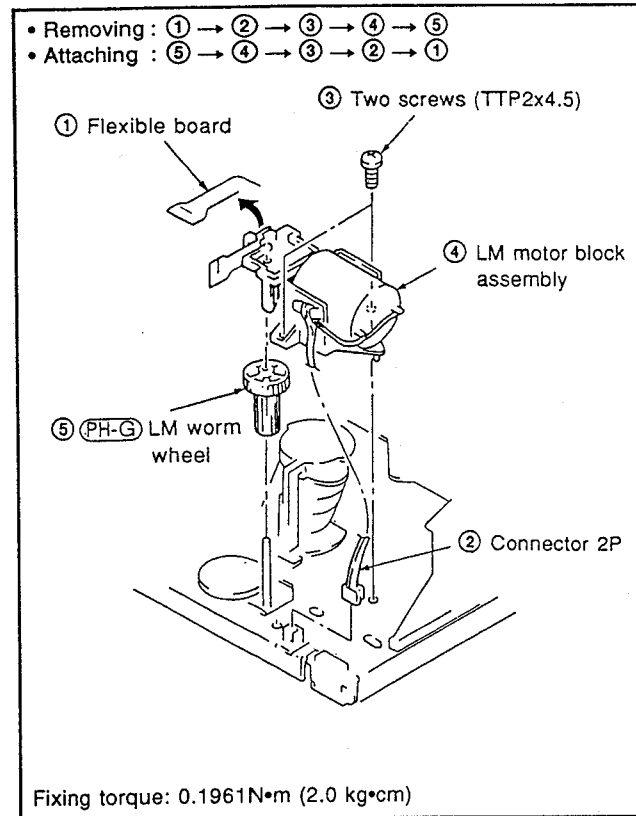
Main cam (rear side)

5-26. TG3/4 ARM BLOCK ASSEMBLY (TG3/4 ARM ASSEMBLY, TG3/4 LIMITER SPRING AND TG3/4 GEAR) TG3/4 BASE BLOCK ASSEMBLY (TG3/4 BASE ASSEMBLY)

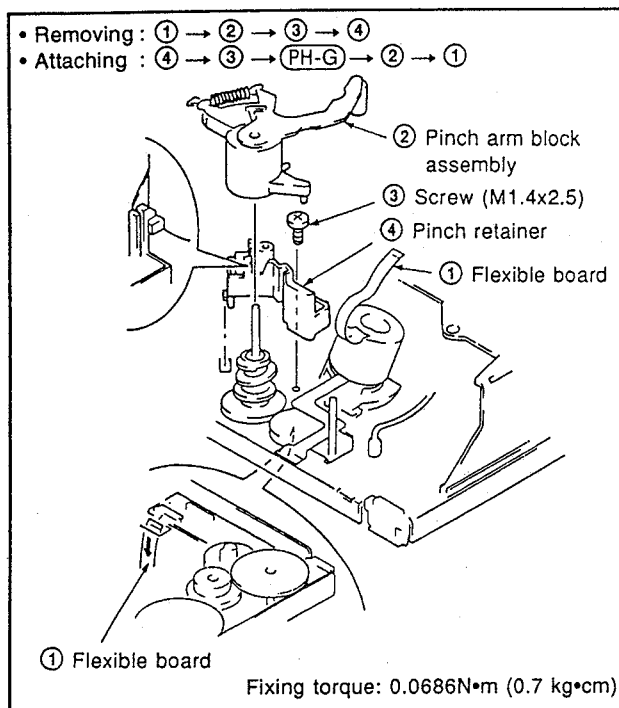
1. Removing

①. Set the **UNLOADING** position. (Refer to page 5-3.)

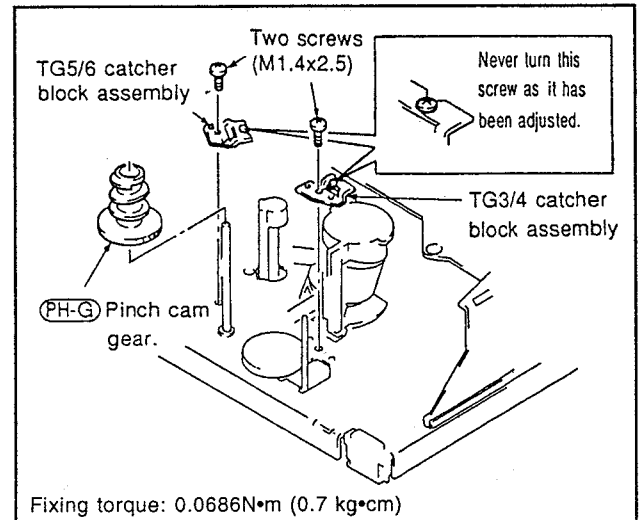
②. LM motor block assembly and LM worm wheel.



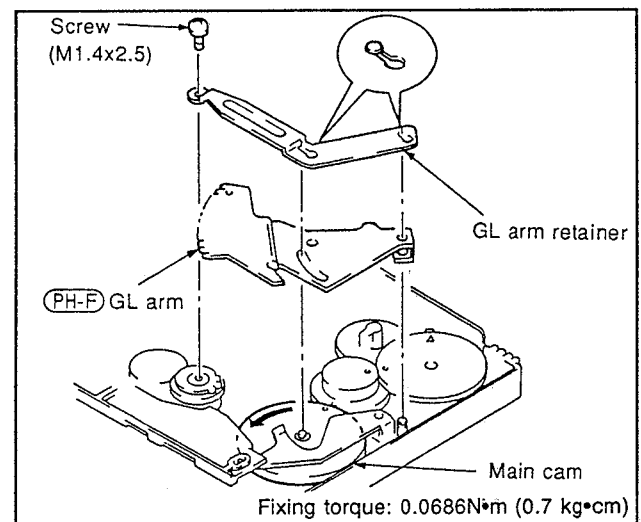
③. Pinch arm block assembly and pinch retainer.



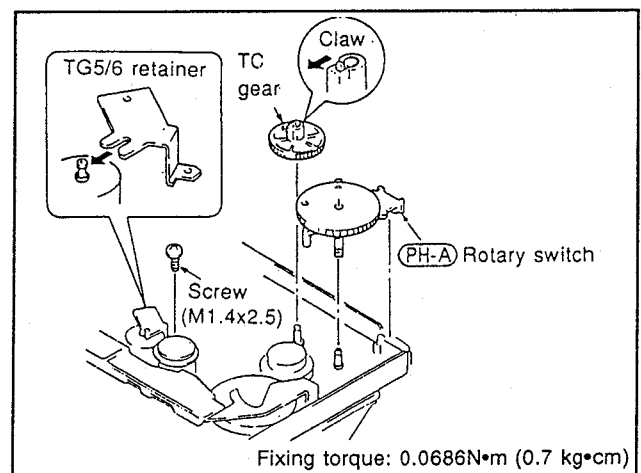
④. TG3/4, TG5/6 catcher block assembly and pinch cam gear.



⑤. GL arm retainer and GL arm.



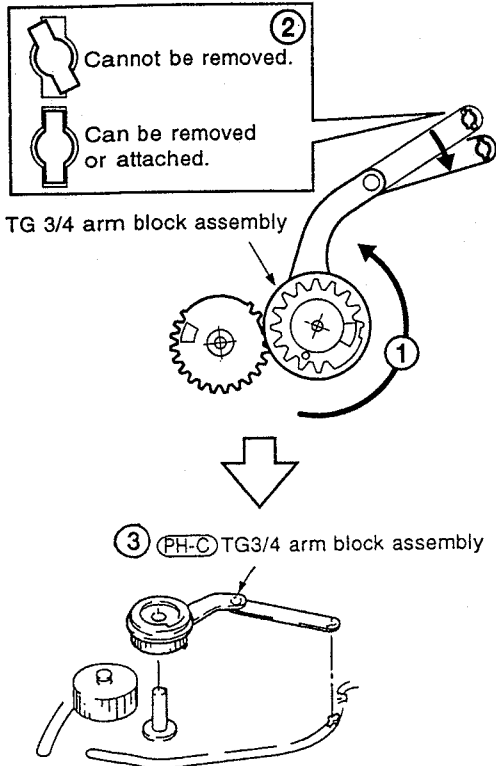
⑥. Rotary switch, TC gear and TG5/6 retainer.



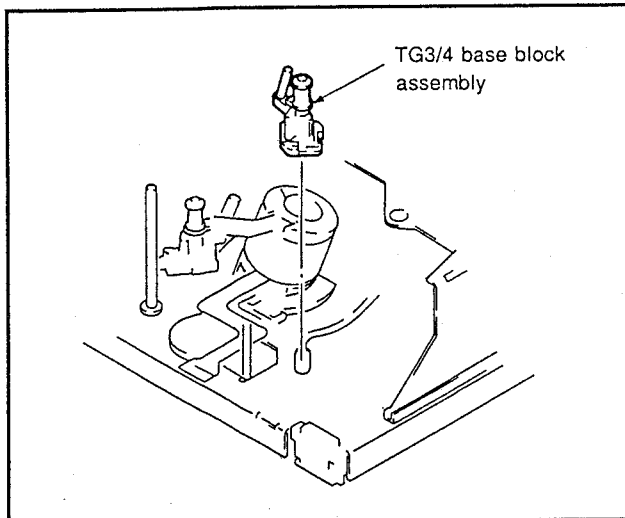
⑦. Set the **LOADING** position. (Refer to page 5-3.)

⑧. TG3/4 arm block assembly.

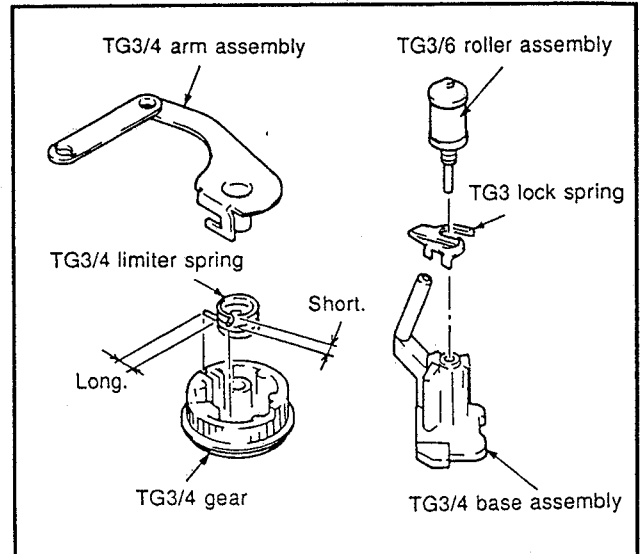
• Removing: ① → ② → ③



⑨. TG3/4 base block assembly.

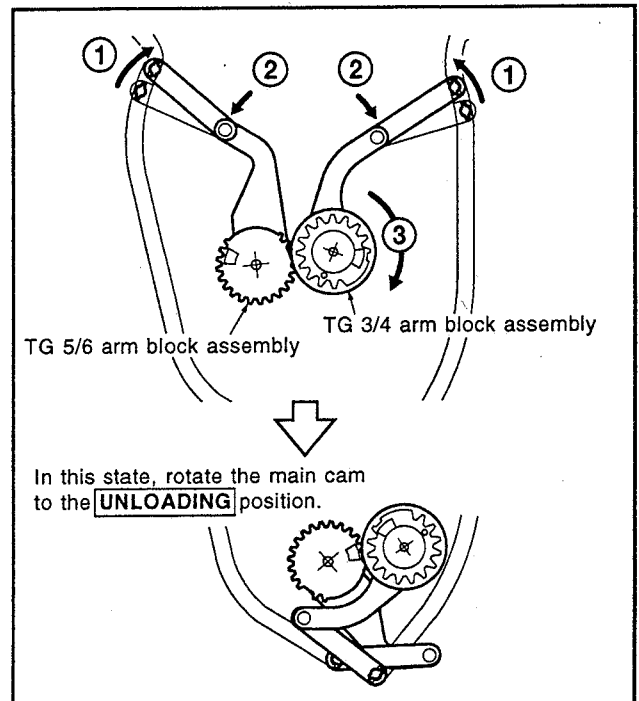


⑩. TG3/4 arm assembly, TG3/4 limiter spring, TG3/4 gear, TG3/6 roller assembly, TG3 lock spring and TG3/4 base assembly.



2. Attaching

- ①. Set the **LOADING** position. (Refer to page 5-3.)
- ②. TG3/4 arm assembly, TG3/4 limiter spring, TG3/4 gear, TG3/6 roller assembly, TG3 lock spring and TG3/4 base assembly.
- ③. TG3/4 base block assembly.
- ④. TG3/4 arm block assembly.



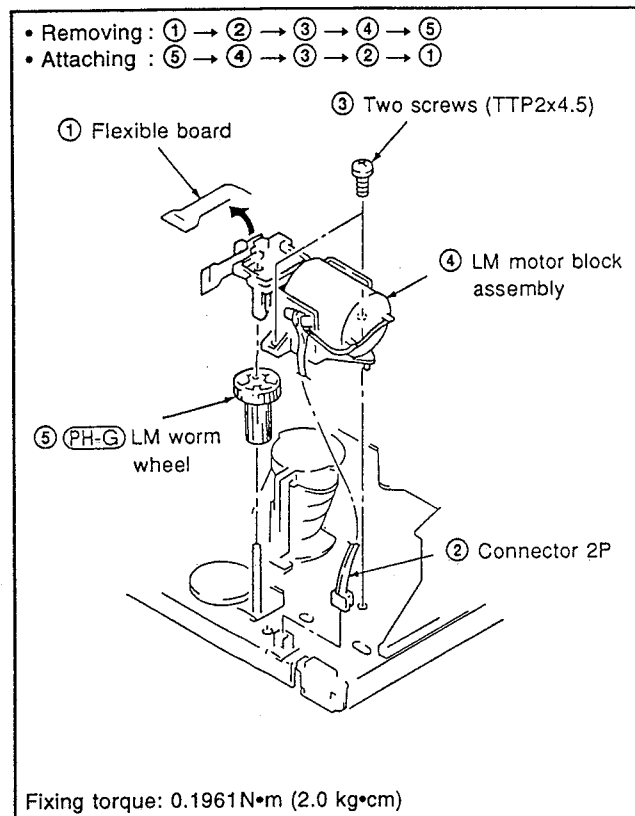
- ⑤. Attach the parts in the order of ⑥ → ⑤ → ④ → ③ → ②.
- ⑥. Adjust them according to the flow chart (START-3) on page 5-43.

5-27. TG5/6 ARM BLOCK ASSEMBLY (TG5/6 ARM ASSEMBLY, TG5/6 LIMITER SPRING AND TG5/6 GEAR) TG5/6 BASE BLOCK ASSEMBLY (TG5/6 BASE ASSEMBLY)

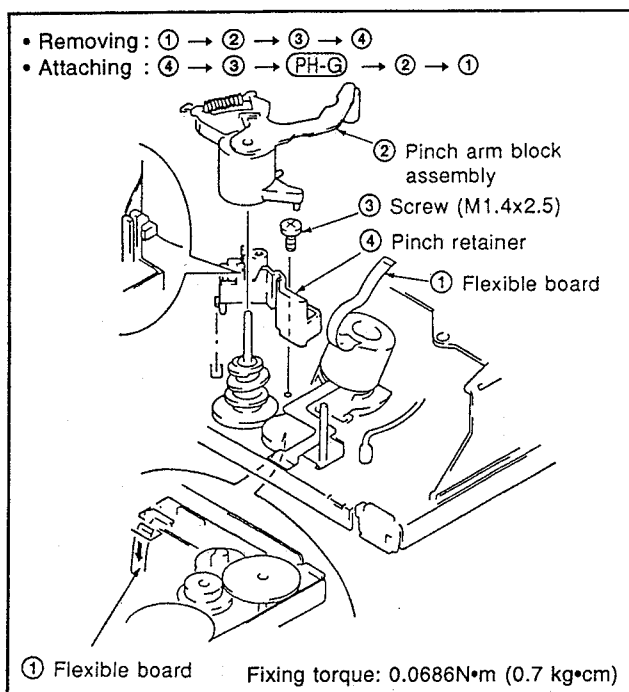
1. Removing

①. Set the **UNLOADING** position. (Refer to page 5-3.)

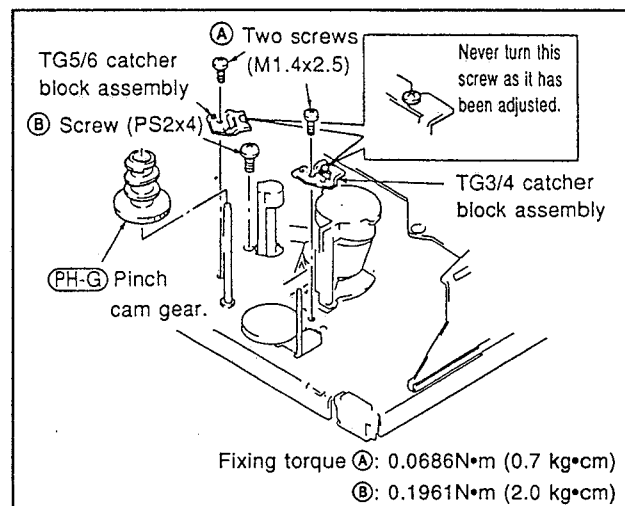
②. LM motor block assembly and LM worm wheel.



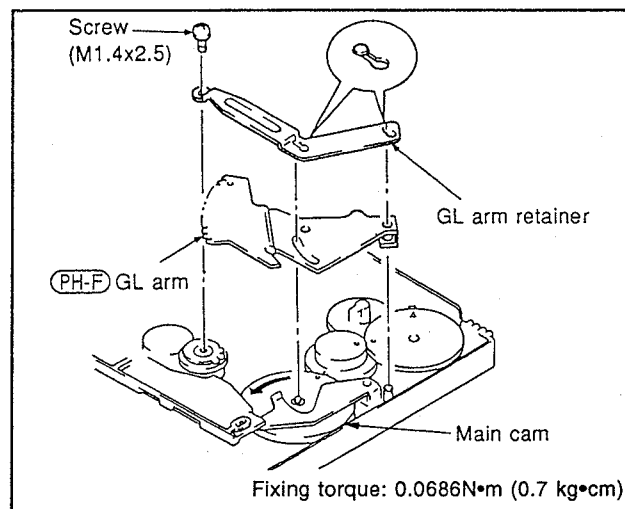
③. Pinch arm block assembly and pinch retainer.



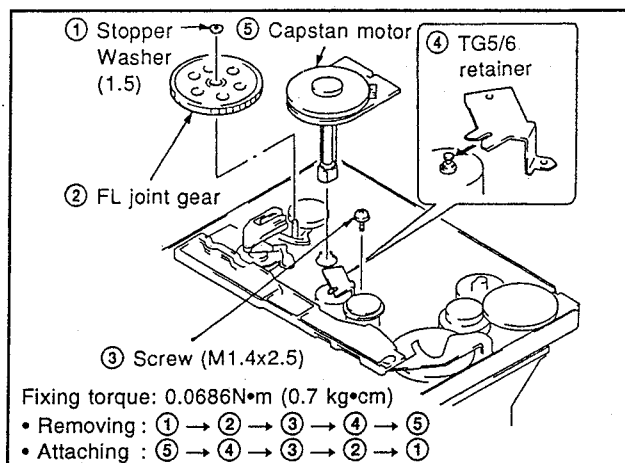
④. TG3/4, TG5/6 catcher block assembly, screw of capstan motor and pinch cam gear.



⑤. GL arm retainer and GL arm.



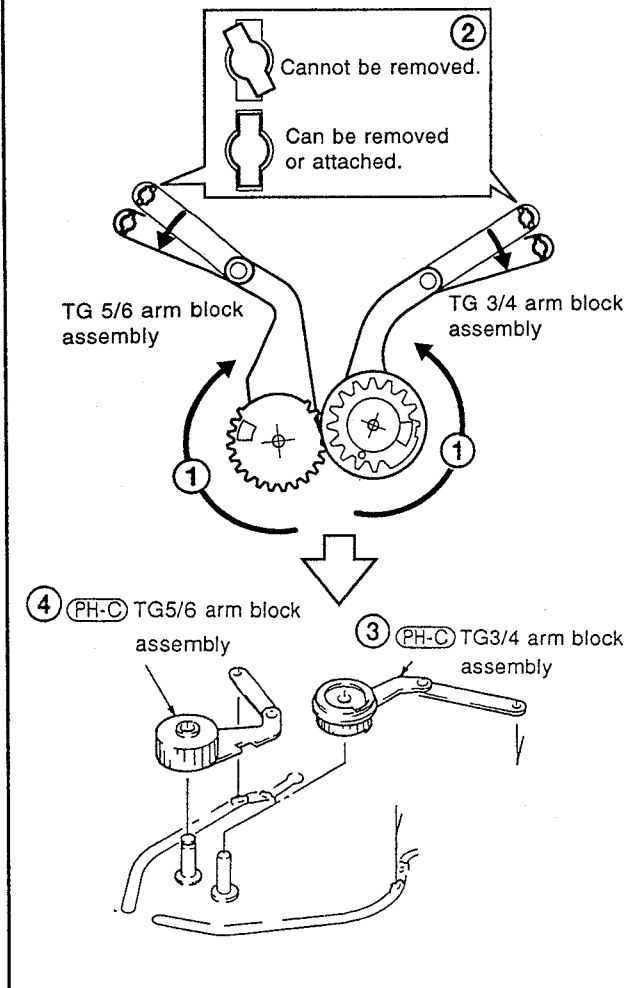
⑥. FL joint gear, capstan motor and TG5/6 retainer.



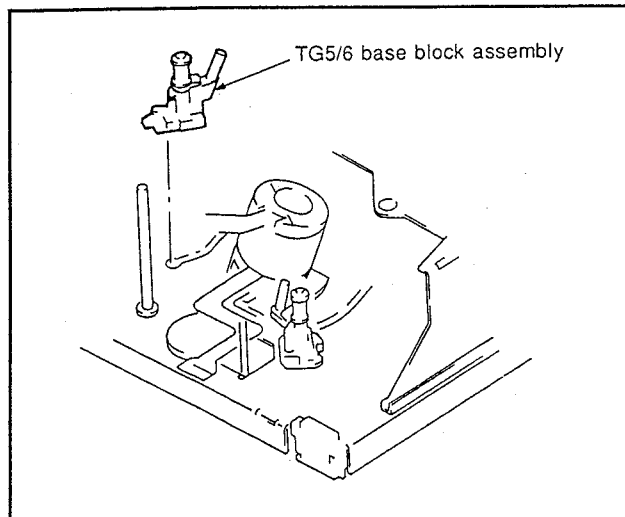
⑦. Set the **LOADING** position. (Refer to page 5-3.)

⑧. TG3/4 arm block assembly and TG5/6 arm block assembly.

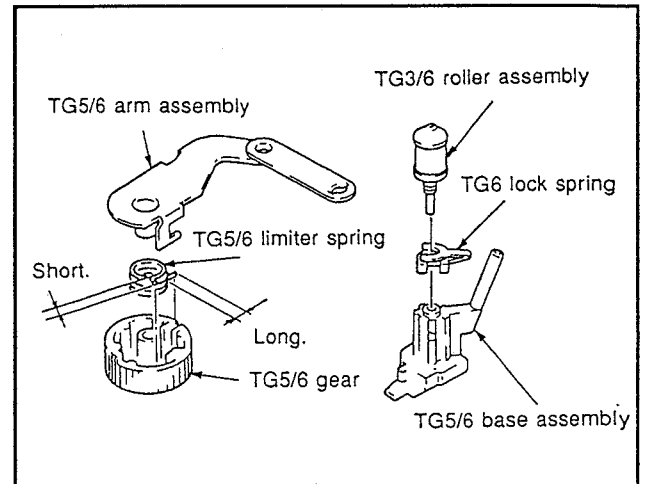
• Removing : ① → ② → ③ → ④



⑨. TG5/6 base block assembly.

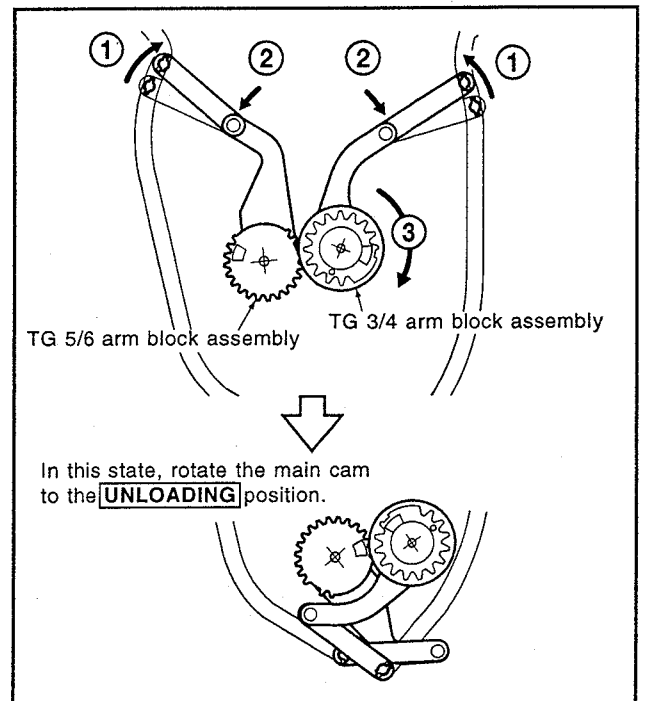


⑩. TG5/6 arm assembly, TG5/6 limiter spring, TG5/6 gear, TG3/6 roller assembly, TG6 lock spring and TG5/6 base assembly.



2. Attaching

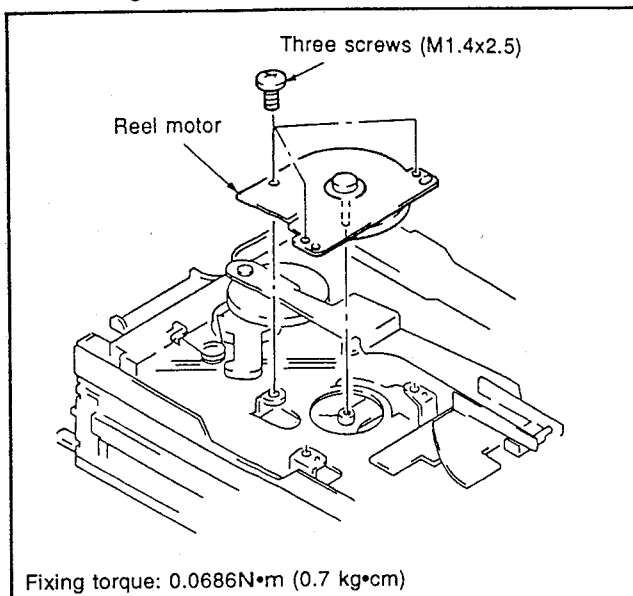
- ① Set the **LOADING** position. (Refer to page 5-3.)
- ② TG5/6 arm assembly, TG5/6 limiter spring, TG5/6 gear, TG3/6 roller assembly, TG6 lock spring and TG5/6 base assembly.
- ③ TG5/6 base block assembly.
- ④ TG3/4 arm block assembly and TG5/6 arm block assembly.



- ⑤ Attach the parts in the order of ⑥ → ⑤ → ④ → ③ → ②.
- ⑥ Adjust them according to the flow chart (START-3) on page 5-43.

5-28. REEL MOTOR

• Removing/Attaching

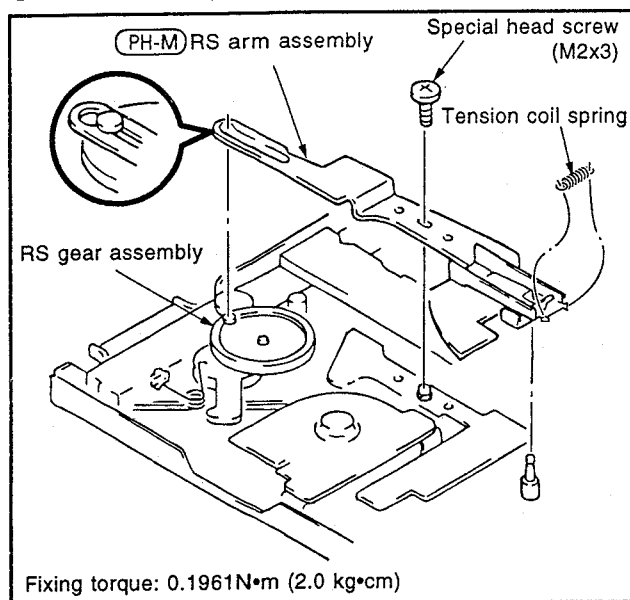


5-29. RS ARM ASSEMBLY

1. Removing

①. Set the (S/L cassette) position. (Refer to page 5-2.)

②. RS arm assembly.



2. Attaching

• Attach the parts in the order of ① → ②.

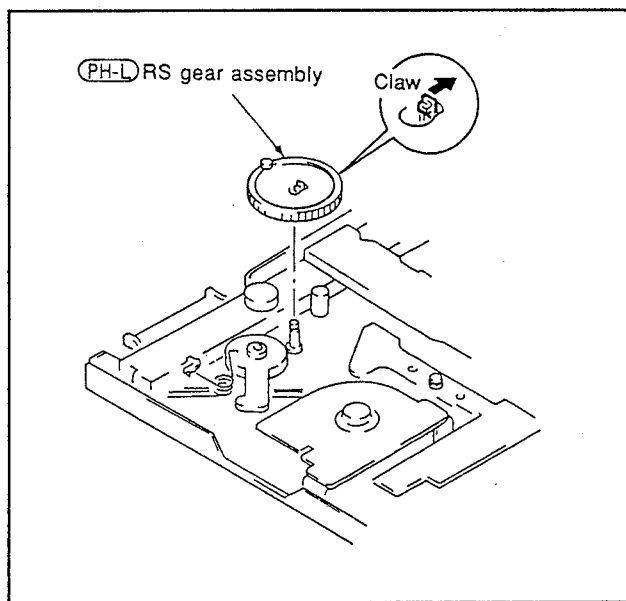
5-30. RS GEAR ASSEMBLY, MIC PRESS SPRING AND MIC LEVER

1. Removing

①. Set the (S/L cassette) position. (Refer to page 5-2.)

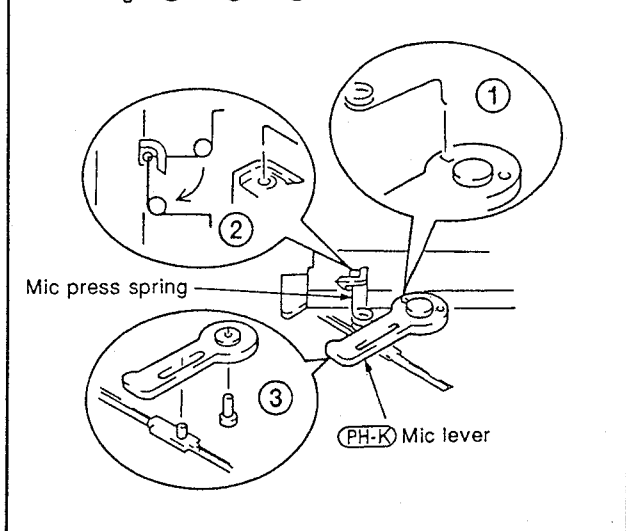
②. RS arm assembly. (Refer to 5-29.)

③. RS gear assembly.



④. Mic press spring and Mic lever.

- Removing : ① → ② → ③
- Attaching : ③ → ② → ①



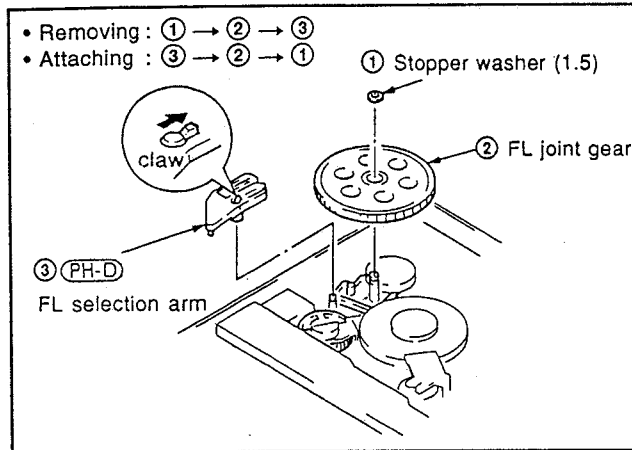
2. Attaching

• Attach the parts in the order of ① → ④ → ③ → ②.

5-31. RACK JOINT GEAR, RACK HOLDER, MIC HOLDER, RACK (LC) AND RACK (SC)

1. Removing

①. FL joint gear, TG7 selection arm.

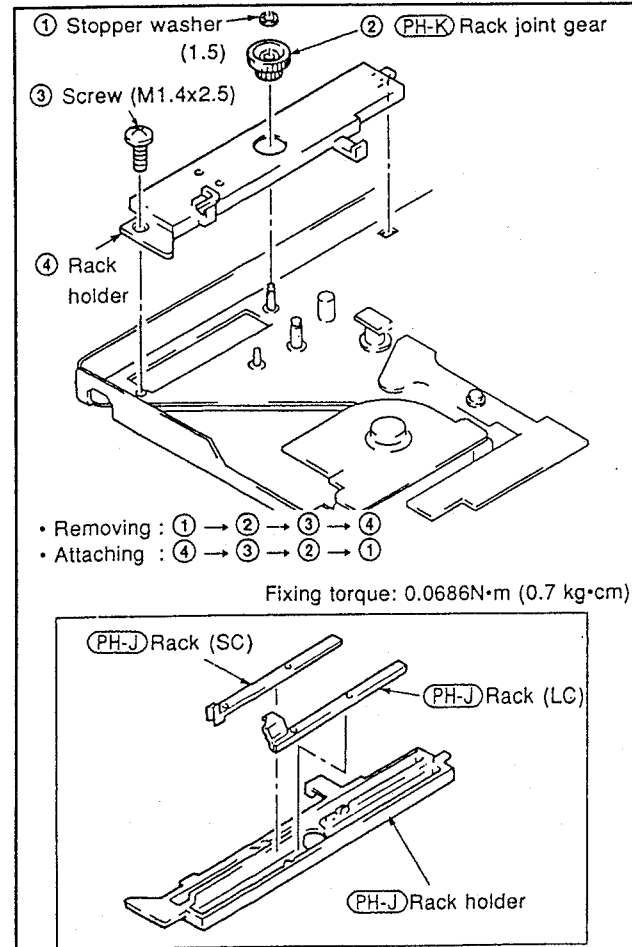


②. Set the **S/L cassette** position. (Refer to page 5-2.)

③. RS arm assembly. (Refer to 5-29.)

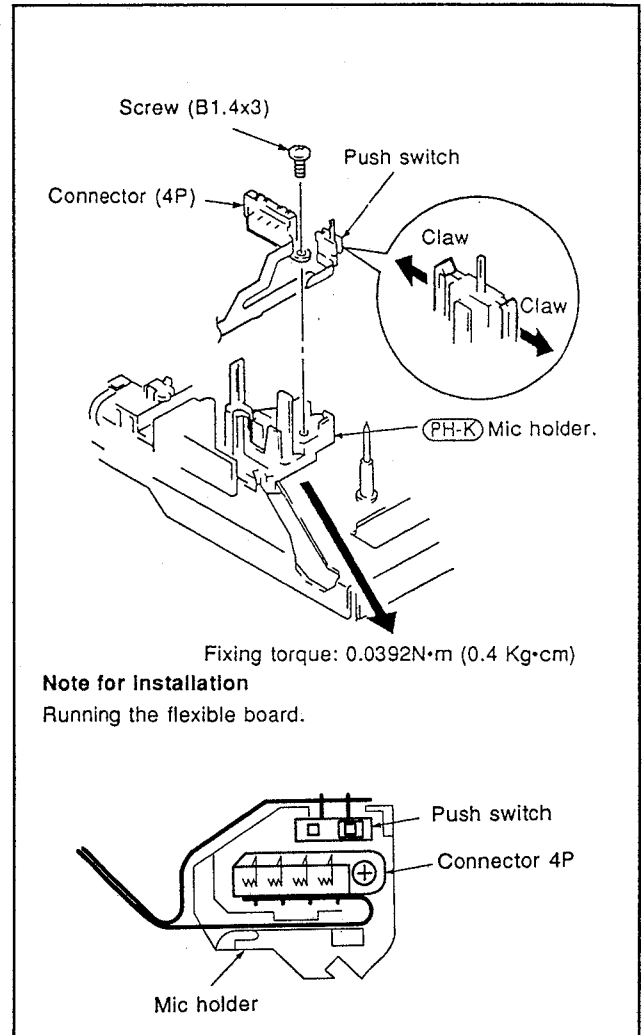
④. RS gear assembly, Mic press spring and Mic lever. (Refer to 5-30.)

⑤. Rack joint gear, rack holder, rack (LC) and rack (SC).



⑥. FL block assembly. (Refer to page 5-2.)

⑦. Push switch, Connector (4P), Mic holder.



2. Attaching

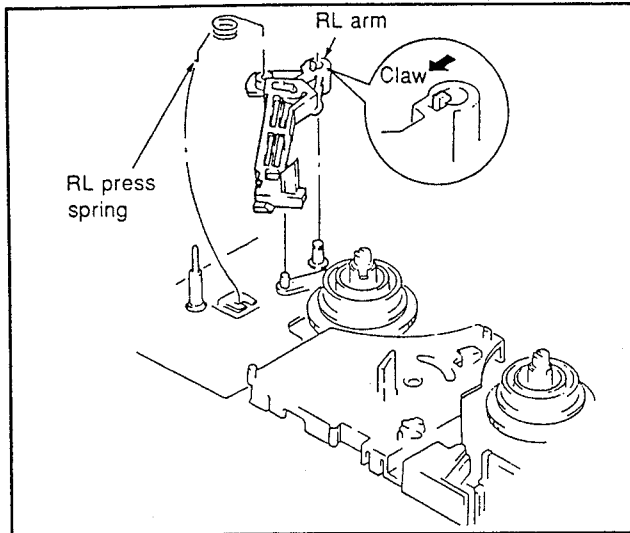
- Attach the parts in the order of ② → ⑦ → ⑥ → ⑤ → ④ → ③ → ①.

5-32. PLATE LINK ASSEMBLY

1. Removing

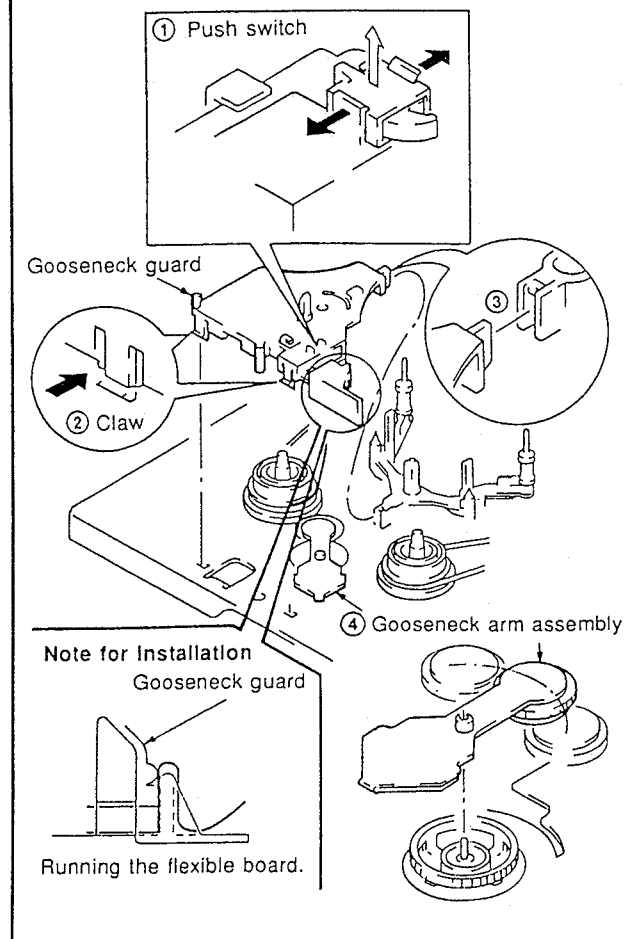
①. Set the **L cassette** position. (Refer to page 5-2.)

②. RL arm.

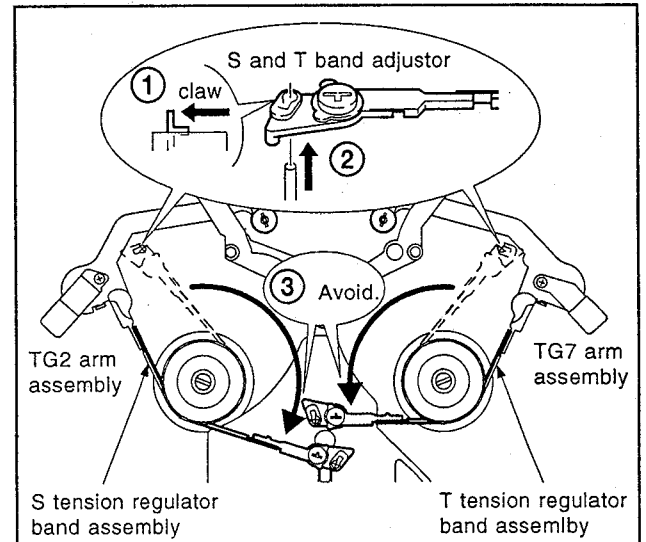


③. Gooseneck guard.

- Removing : ① → ② → ③ → ④
- Attaching : ④ → ③ → ② → ①

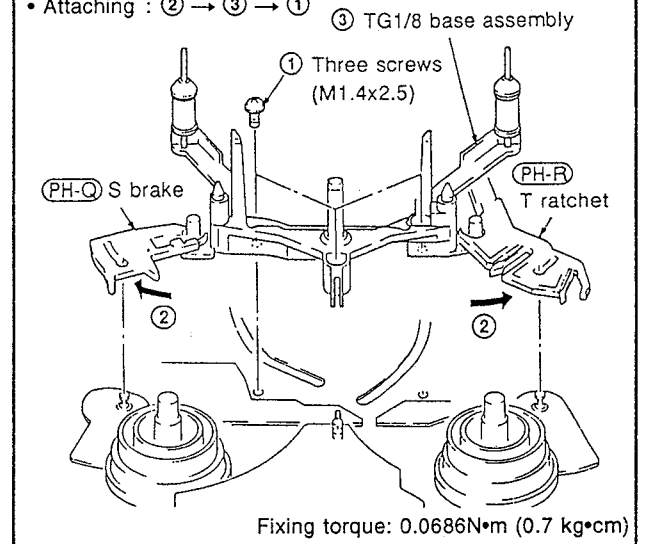


④. S and T band adjuster.

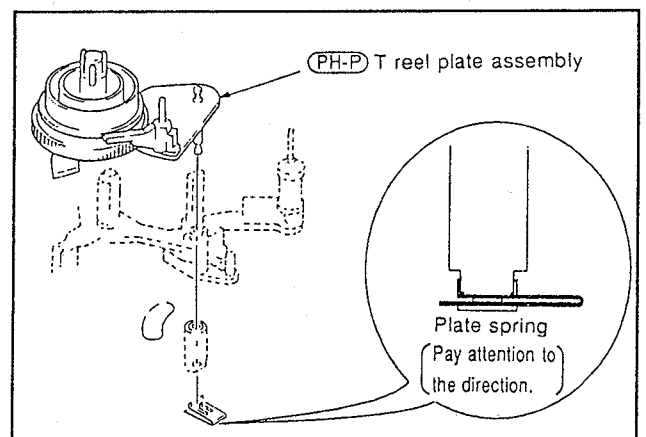


⑤. TG1/8 base assembly. (S brake and T ratchet.)

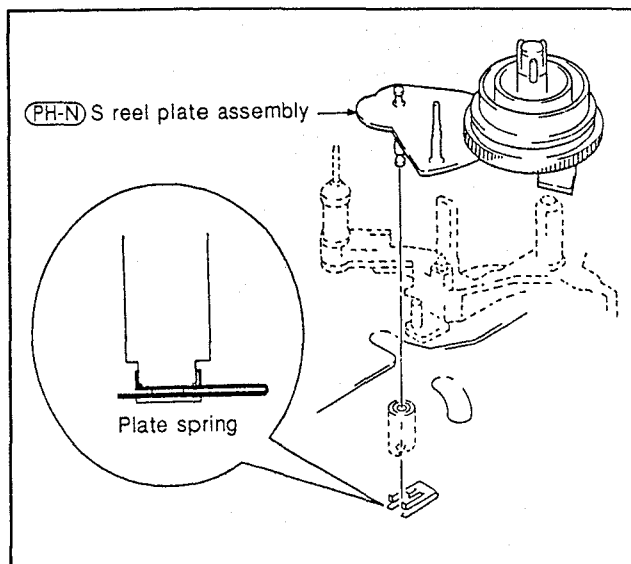
- Removing : ① → ② → ③
- Attaching : ② → ③ → ①



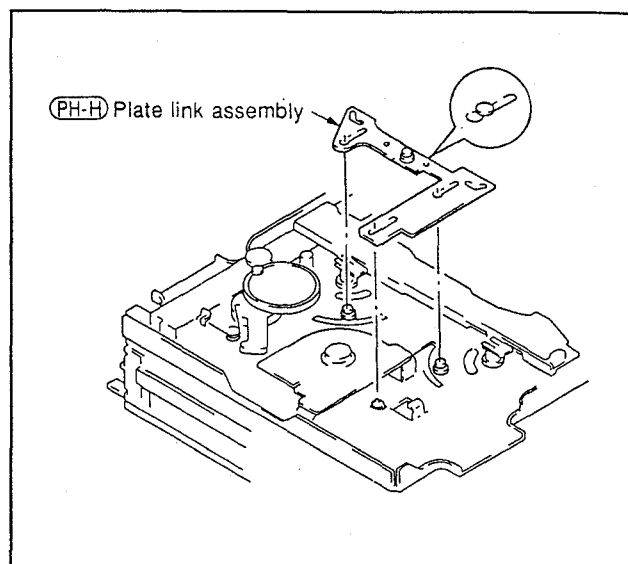
⑥. T reel plate assembly.



⑦. S reel plate assembly.

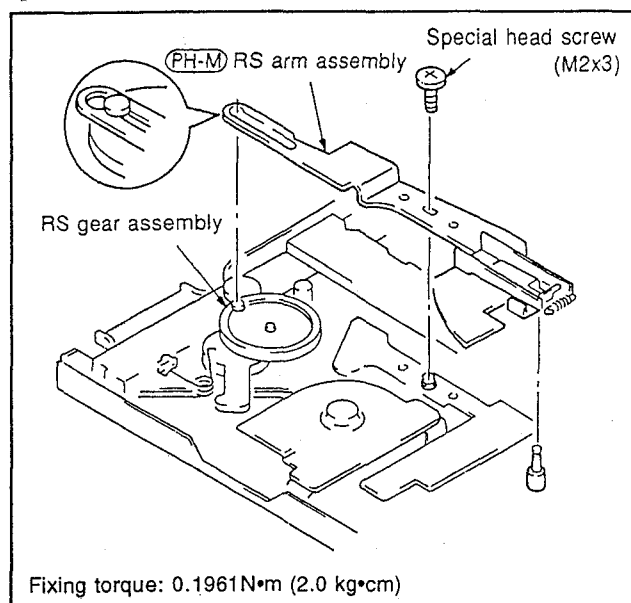


⑩. Plate link assembly.



⑧. Set the (S/L cassette) position. (Refer to page 5-2.)

⑨. RS arm assembly.

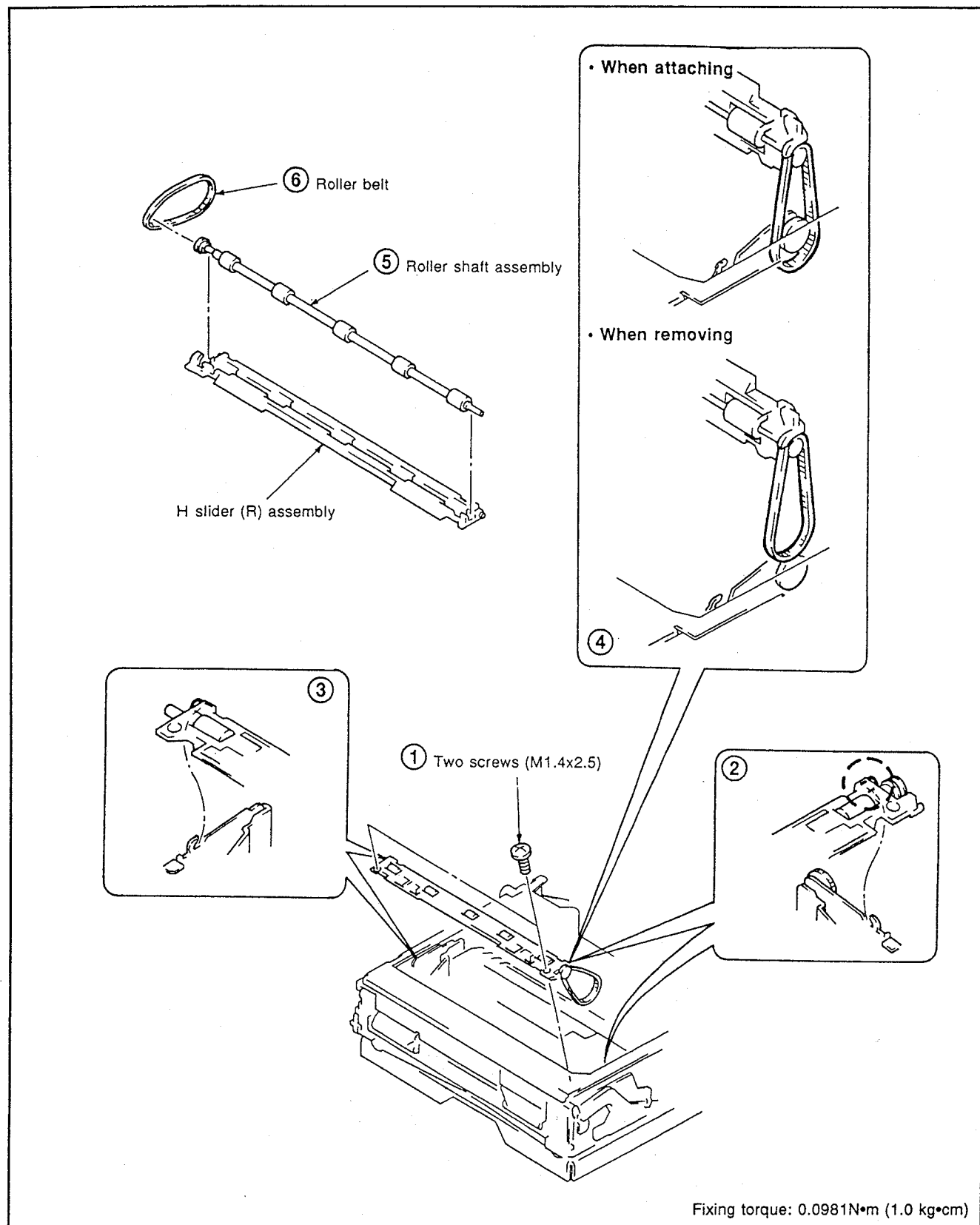


2. Attaching

- ①. Attach the parts in the order of ⑧ → ⑩ → ⑨ → ⑦ → ⑥ → ⑤ → ① → ④ → ③ → ②.
- ②. Adjust them according to the flow chart (START-1) on page 5-43.

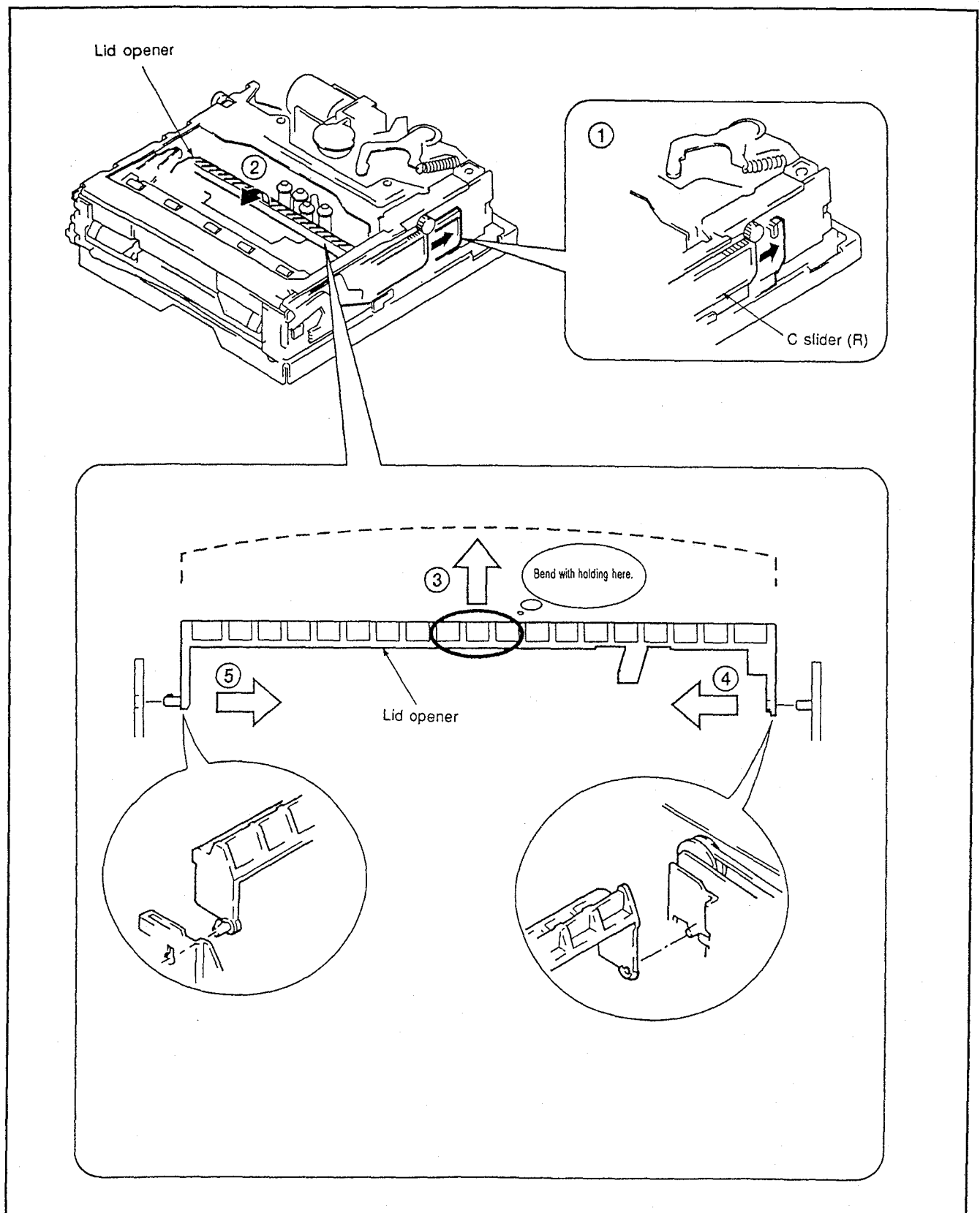
5-33. ROLLER SHAFT ASSEMBLY AND ROLLER BELT

• Removing/Attaching



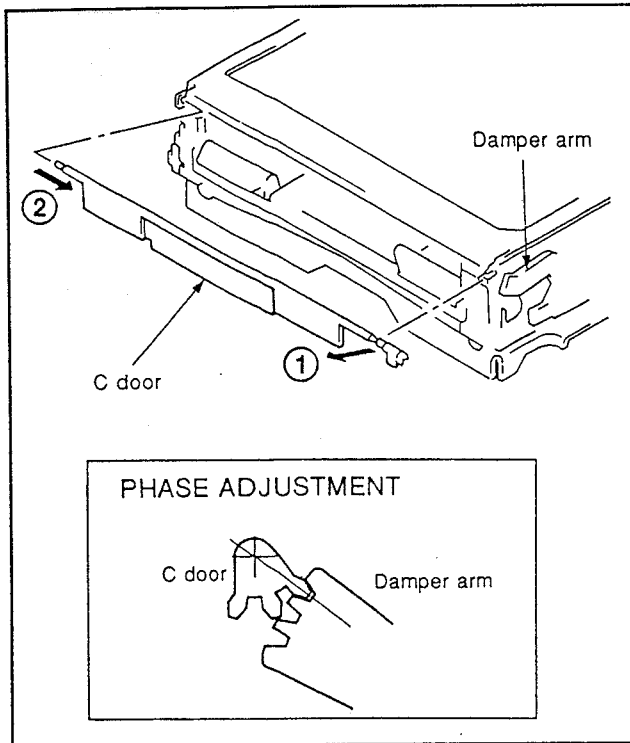
5-34. LID OPENER

• Removing/Attaching



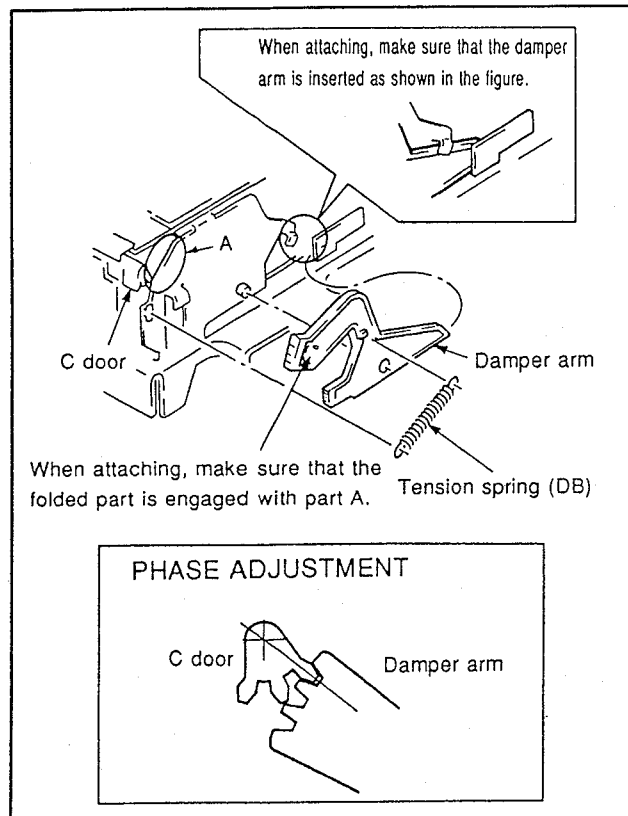
5-35. C DOOR

• Removing/Attaching



5-36. DAMPER ARM AND TENSION SPRING (DB)

• Removing/Attaching

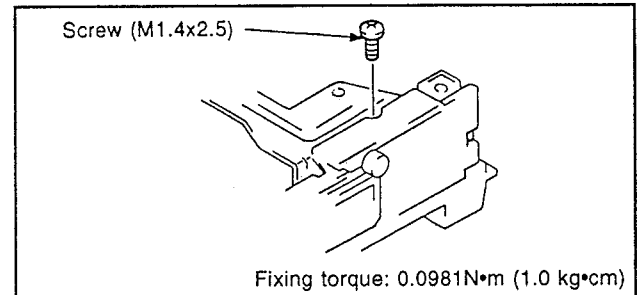


5-37. GEAR (A), GEAR (B) AND C WORM

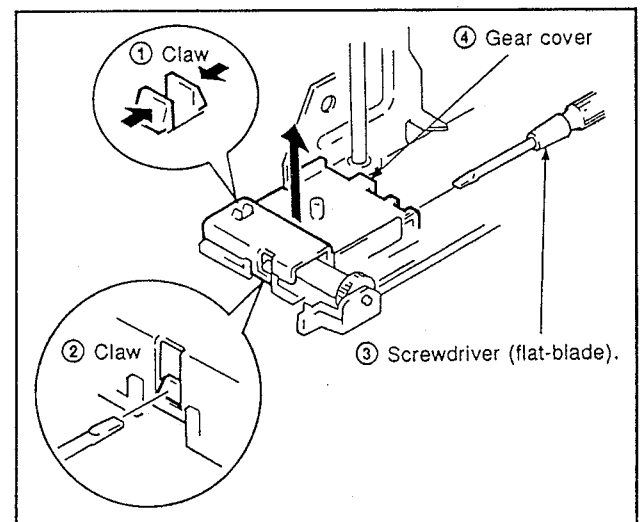
1. Removing

①. FL block assembly. (Refer to page 5-2.)

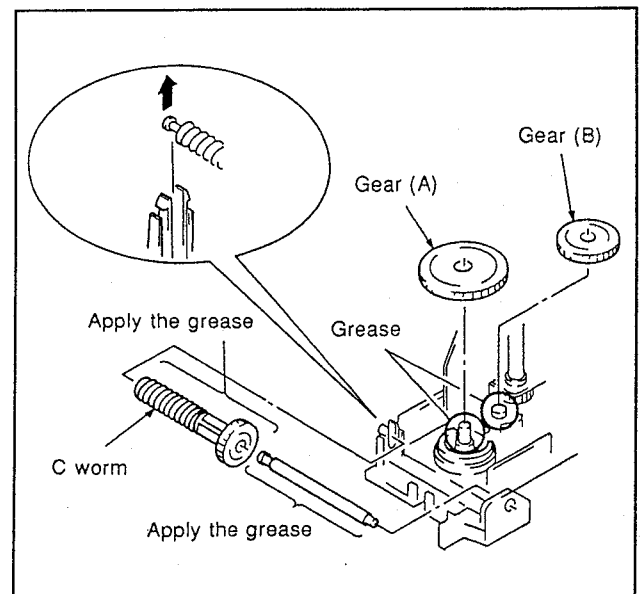
②. Screw (M1.4x2.5).



③. Gear cover.



④. Gear (A), Gear (B) and C worm.

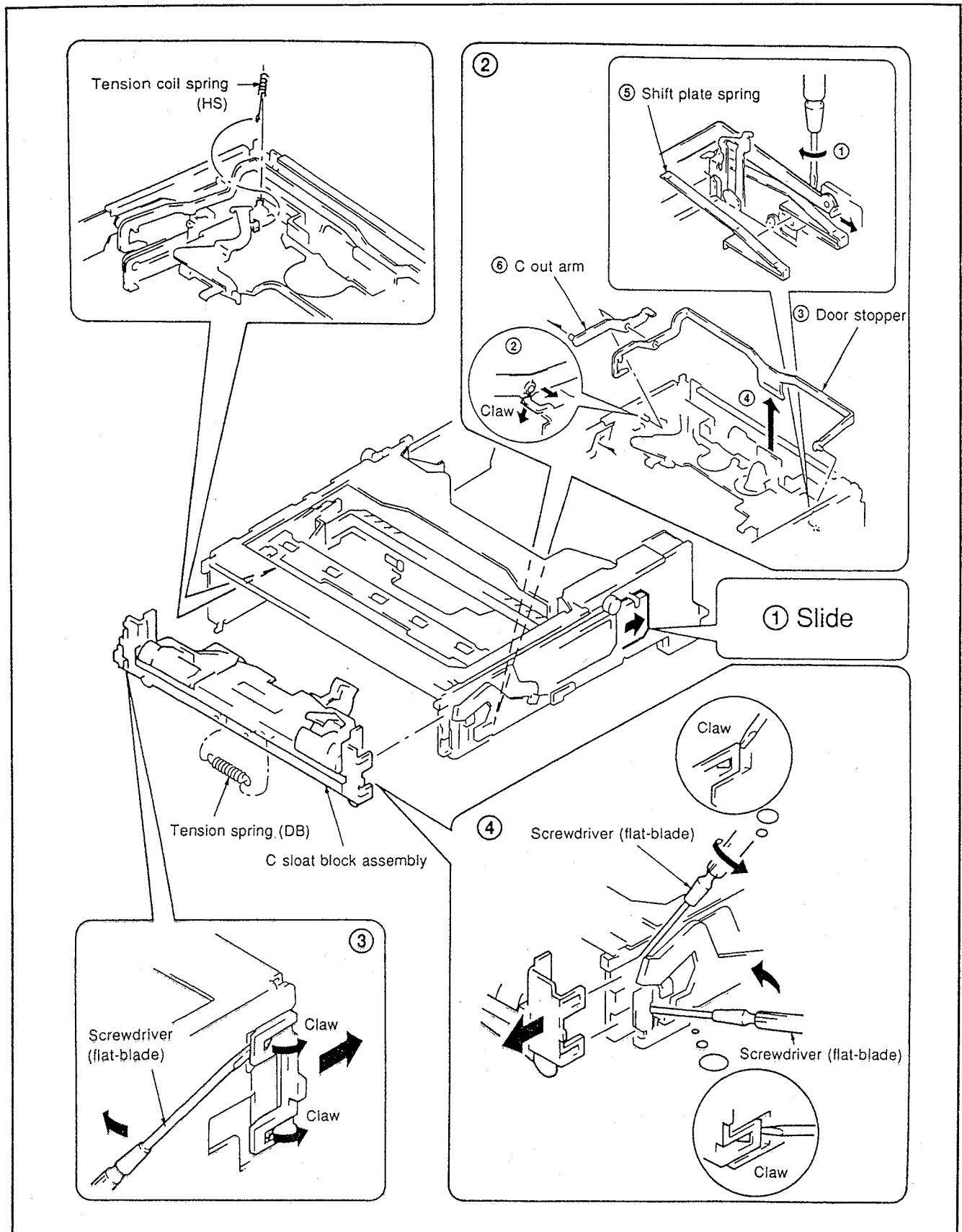


2. Attaching

• Attach the parts in the order of ④ → ③ → ② → ①.

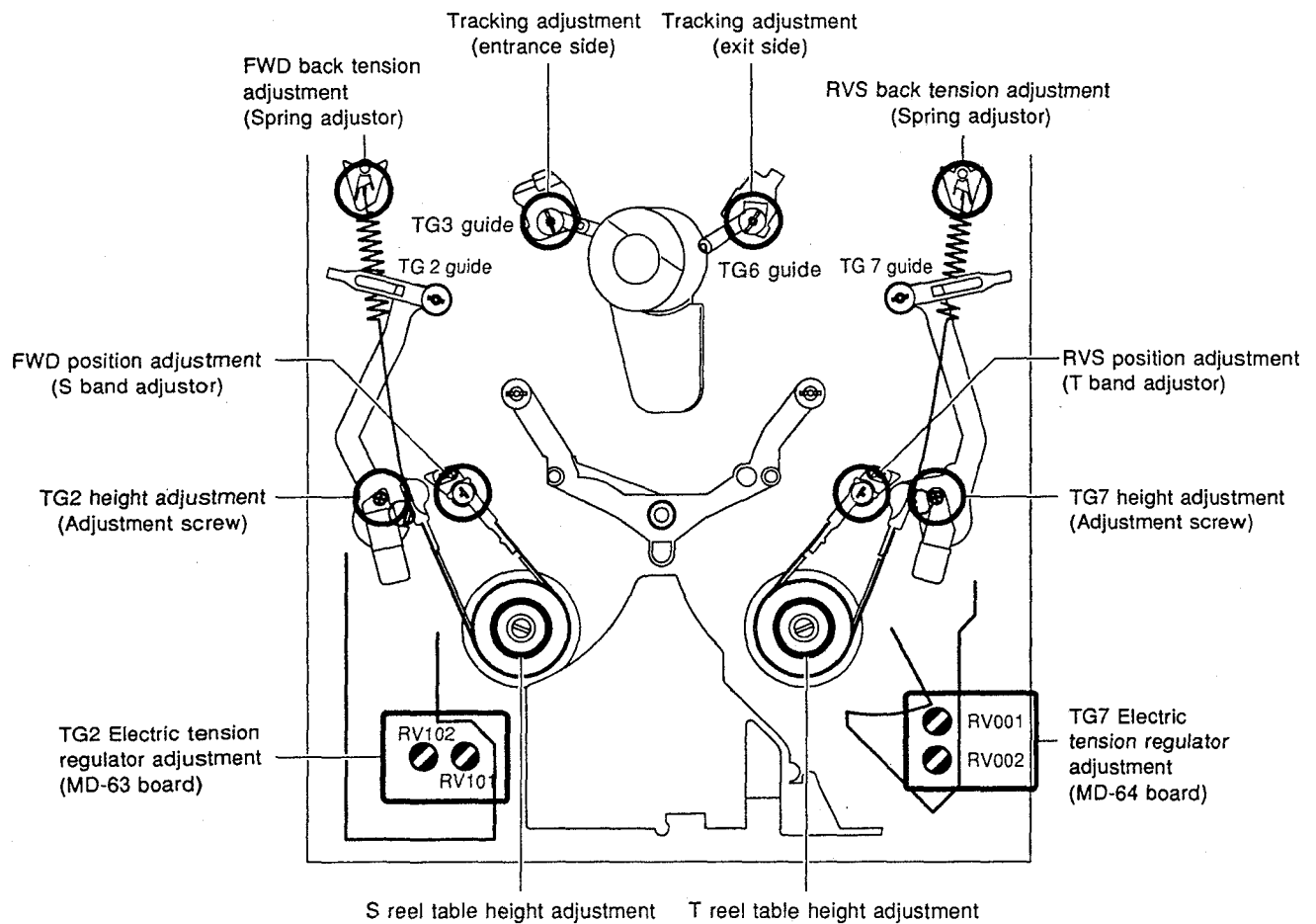
5-38. TENSION COIL SPRING (HS), TENSION SPRING (DB), SHIFT PLATE SPRING AND C SLOAT BLOCK ASSEMBLY

- **Removing/Attaching** (Remove the FL block assembly (Refer to page 5-2)).

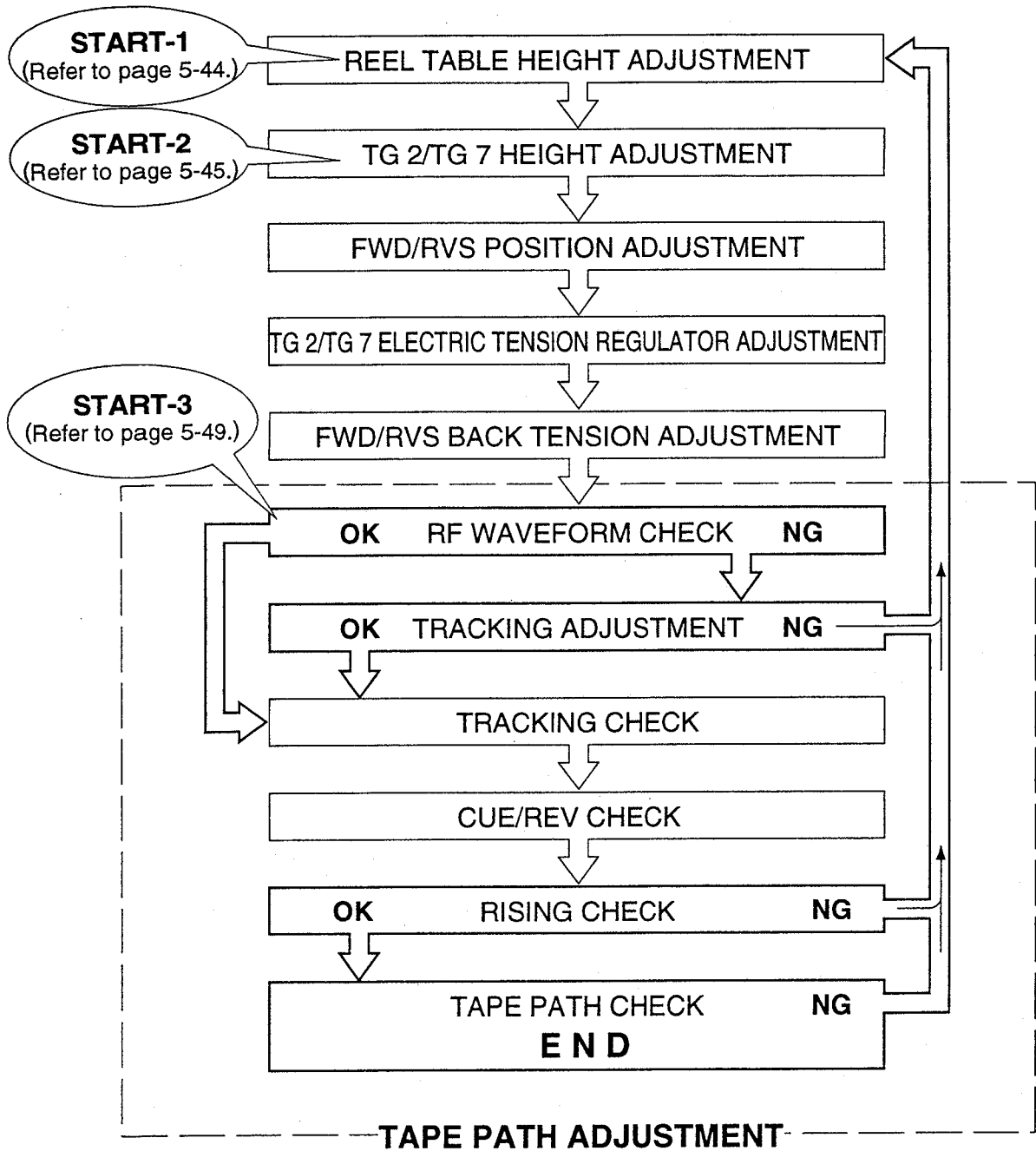


5-1-6. ADJUSTMENTS AND CHECKS

6-1. ADJUSTMENT POSITION



6-2. ADJUSTMENT ORDER



6-3. ADJUSTMENT AND CHECKING METHOD

6-3-1. REEL TABLE HEIGHT ADJUSTMENT

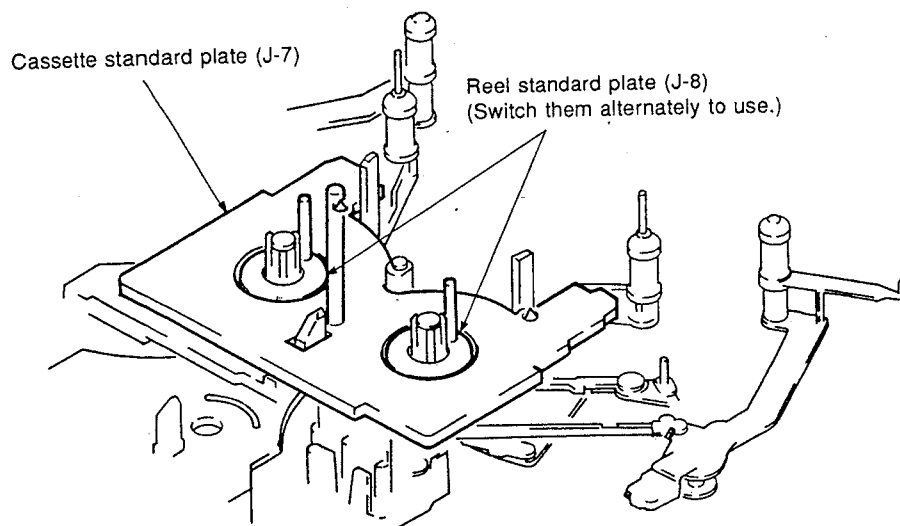
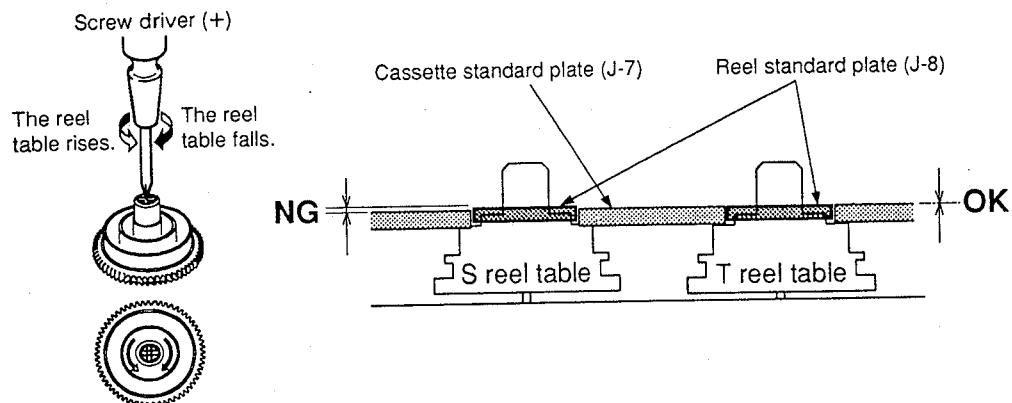
1. Preparation before adjustment

FL block : Remove.

Position : **LOADING** / **S cassette**

Jig used : Cassette standard plate (J-7), Reel standard plate (J-8) and screwdriver (+)

2. Adjusting



6-3-2. TG2/TG7 HEIGHT ADJUSTMENT

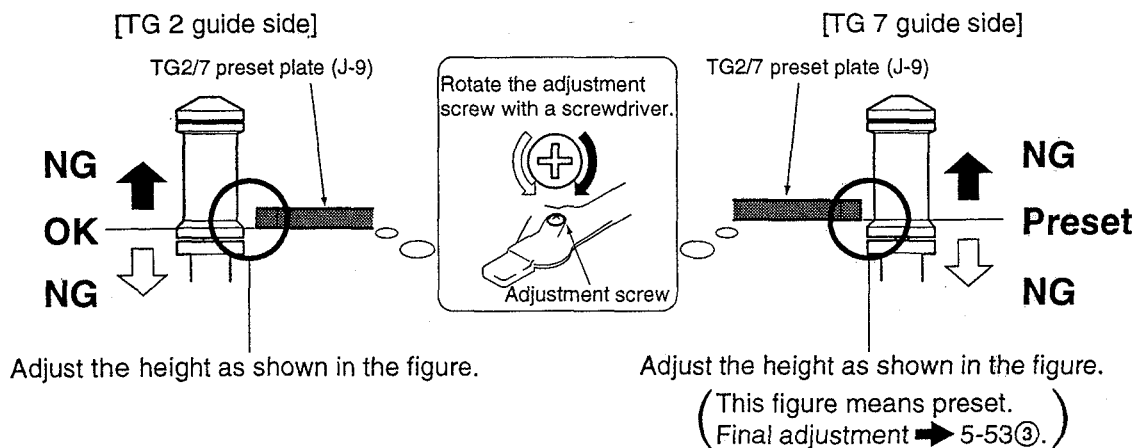
1. Preparation before adjustment

FL block : Remove.

Position : **LOADING** / **S cassette**

Jig used : Cassette standard plate (J-7), TG2/7 preset plate (J-9) and screwdriver
(For attaching jigs, refer to page 5-5.)

2. Adjusting



6-3-3. FWD/RVS POSITION ADJUSTMENT

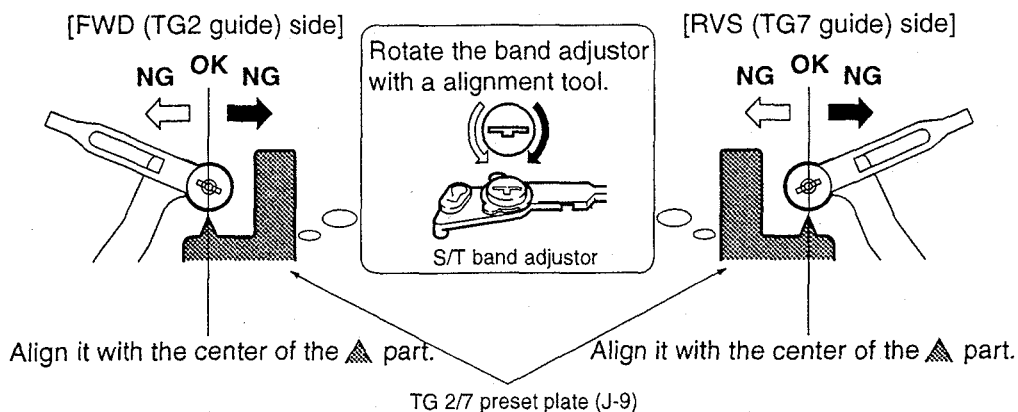
1. Preparation before adjustment

FL block : Remove.

Position : **LOADING** (The pinch roller should be stuck.) / **S cassette**

Jig used : Cassette standard plate (J-7), TG2/7 preset plate (J-9) and screwdriver for tape path

2. Adjusting



6-3-4. TG2/TG7 ELECTRIC TENSION REGULATOR ADJUSTMENT

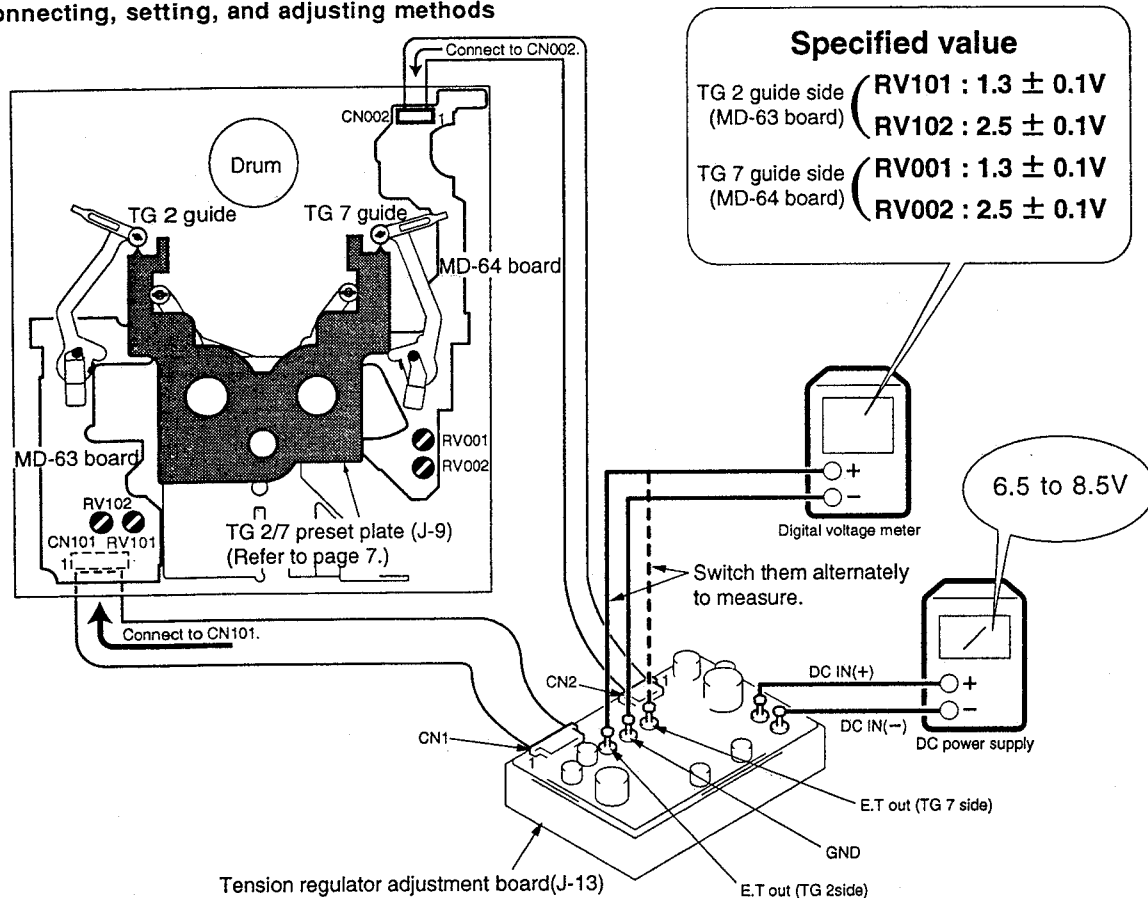
1. Preparation before adjustment

FL block : Remove.

Position : **LOADING** (The pinch roller should be stuck.) / **S cassette**

Jig used : Cassette standard plate (J-7), TG2/7 preset plate (J-9) and screwdriver for tape path
(For attaching jigs, refer to page 5-5.)

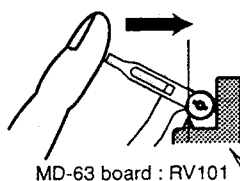
2. Connecting, setting, and adjusting methods



3. Adjusting

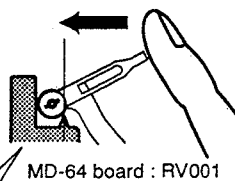
[TG 2 side : 1.3V adjustment]

While pressing the guide, adjust it within $1.3 V \pm 0.1 V$.



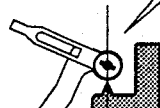
[TG 7 side : 1.3V adjustment]

While pressing the guide, adjust it within $1.3 V \pm 0.1 V$.



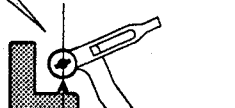
[TG 2 side : 2.5V adjustment]

While pressing the guide, adjust it within $2.5 V \pm 0.1 V$.

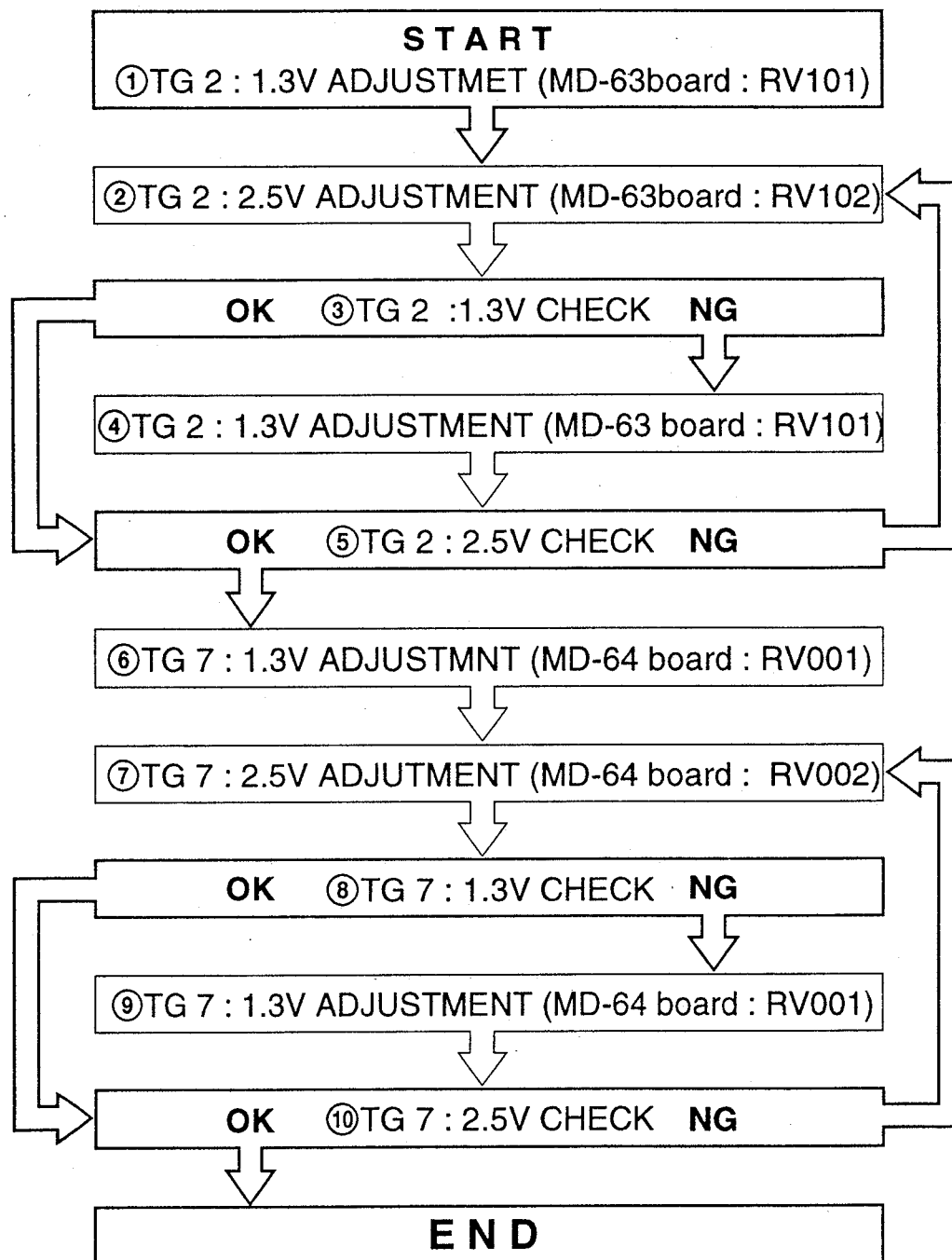


[TG 7 side : 2.5V adjustment]

While pressing the guide, adjust it within $2.5 V \pm 0.1 V$.



4. Adjustment order



6-3-5. FWD/RVS BACK TENSION ADJUSTMENT

1. Preparation before adjustment

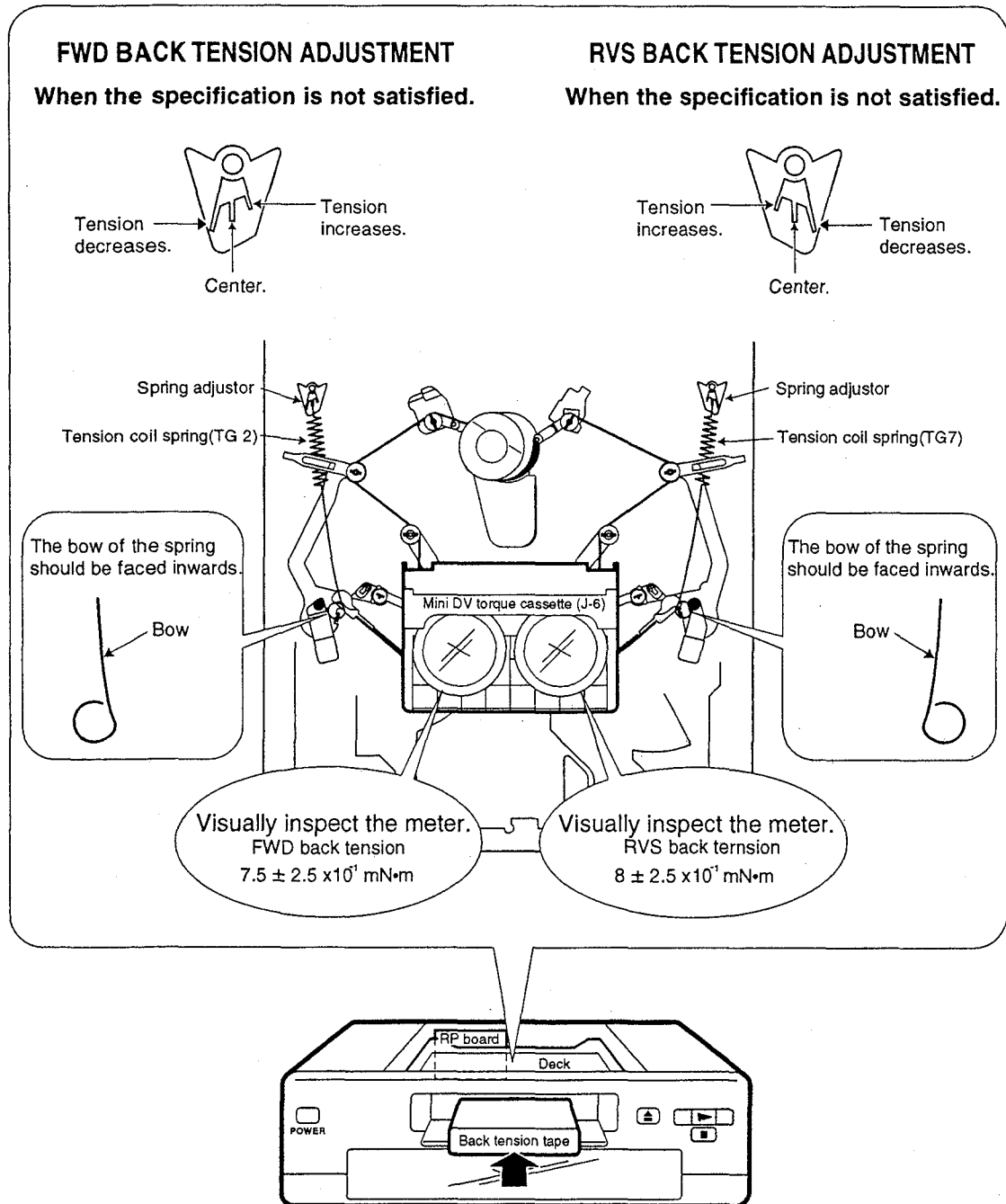
Mechanism deck : Install to the unit.

Jig used : Mini DV torque cassette (J-6), pinset (For change the hooking of spring.)

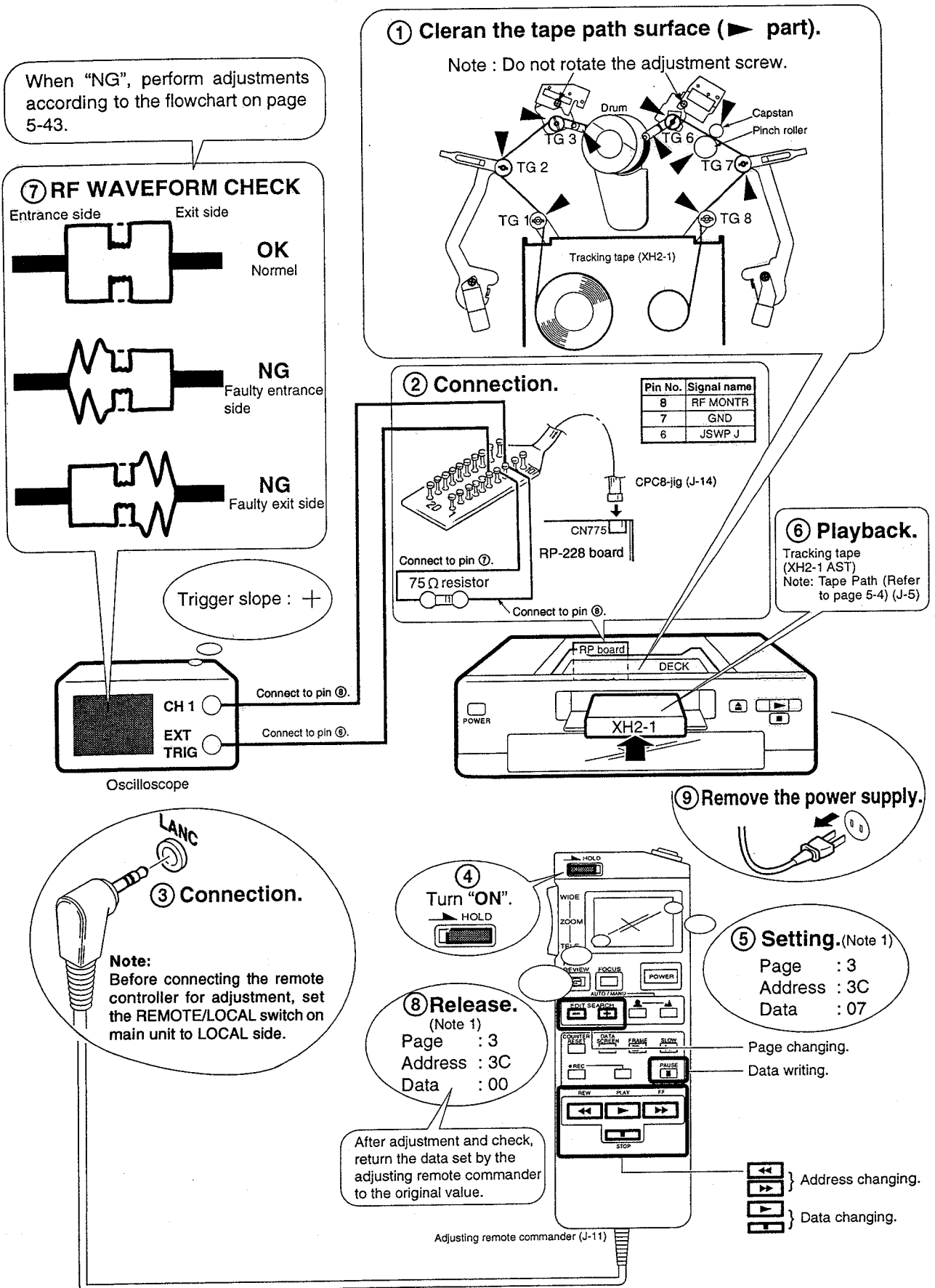
2. Adjusting

Note : At the FWD (TG2) side, measure the Mini DV torque cassette (J-6) in the FWD mode.

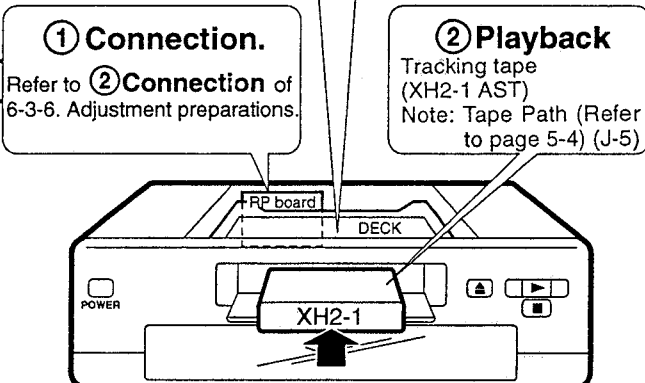
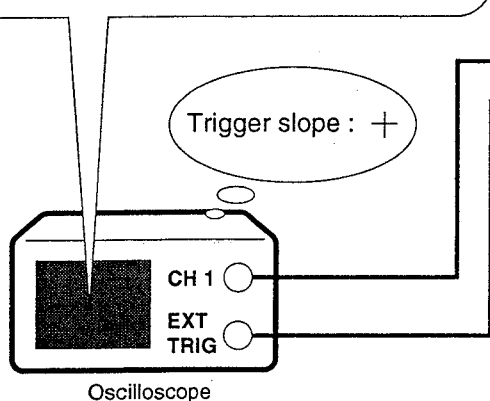
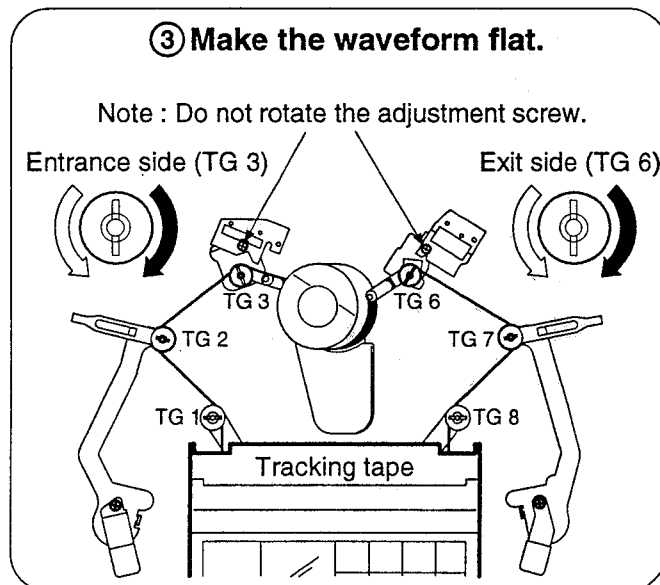
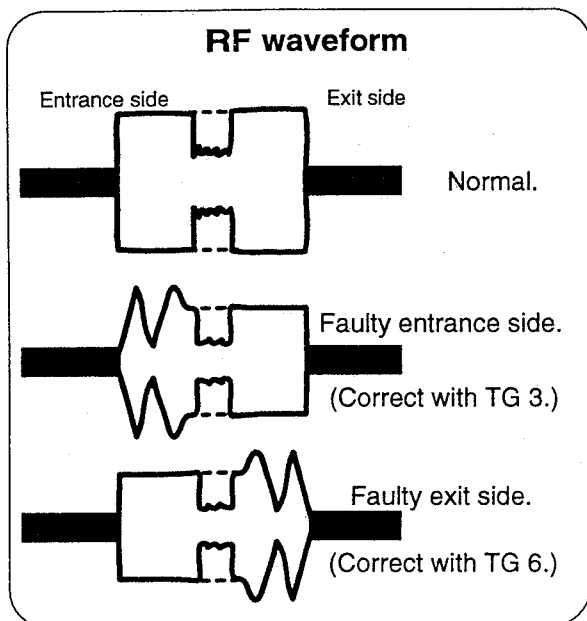
At the RVS (TG7) side, measure the Mini DV torque cassette (J-6) in the RVS mode.



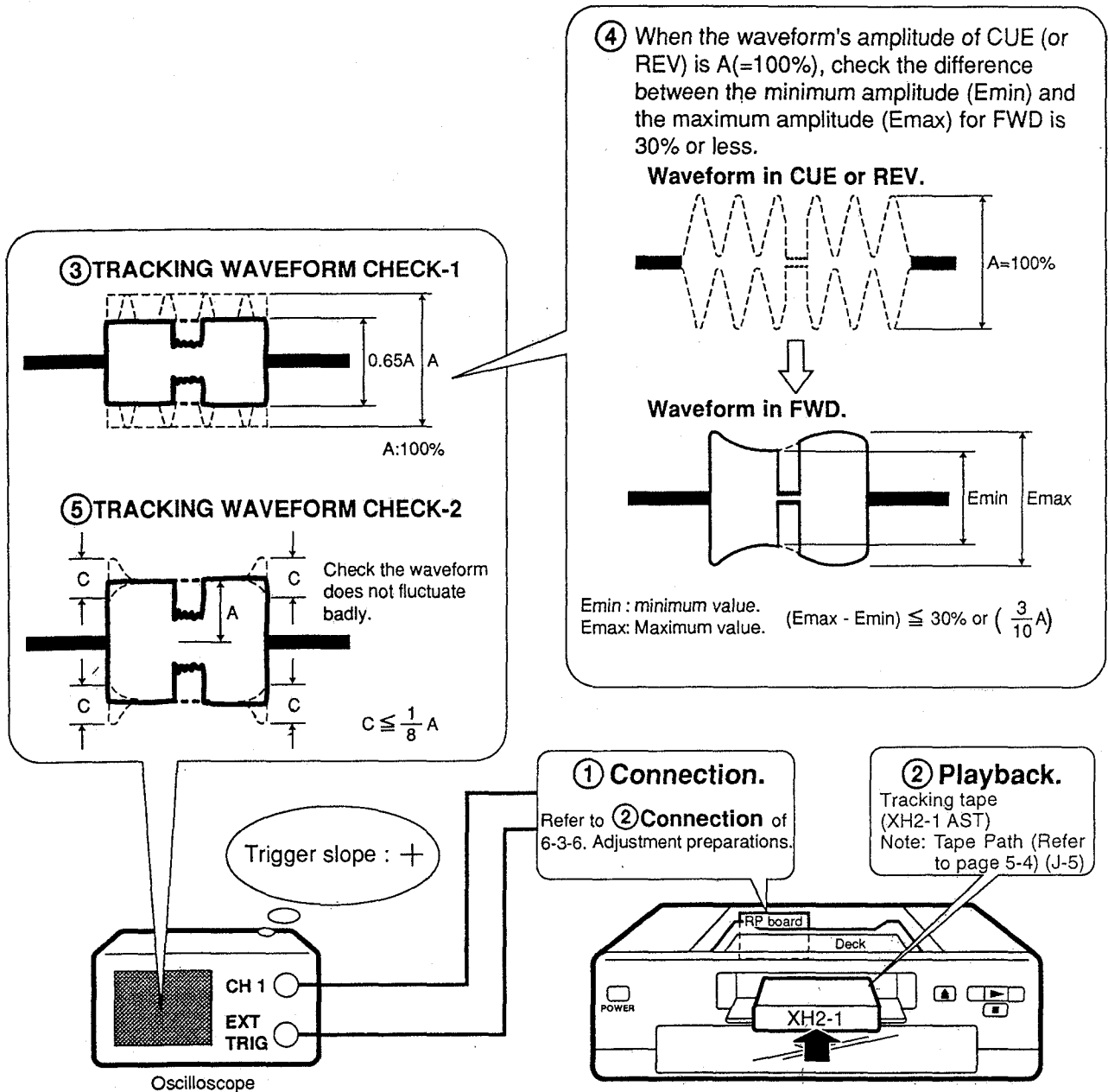
6-3-6. ADJUSTMENT PREPARATIONS AND RF WAVEFORM CHECK



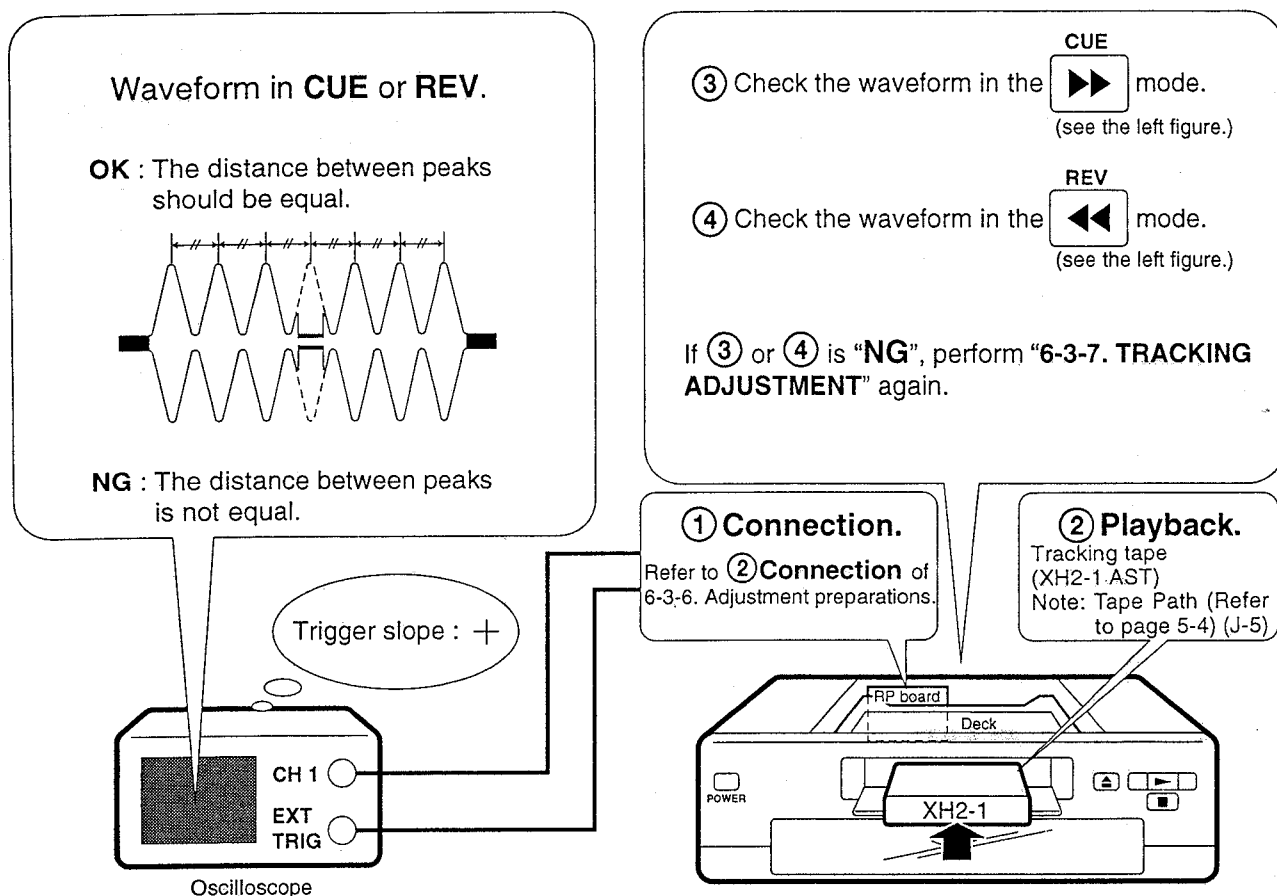
6-3-7. TRACKING ADJUSTMENT



6-3-8. TRACKING CHECK



6-3-9. CUE AND REV CHECK

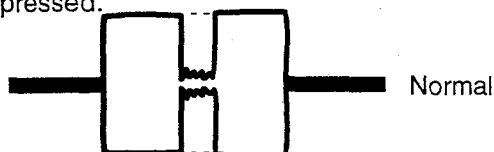


6-3-10. RISING CHECK

Repeat the rising checks ④ to ⑥.

④ RISING CHECK-1

This waveform should rise within two seconds after the playback button is pressed.



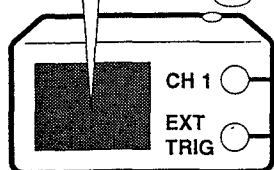
⑤ RISING CHECK-2

This waveform (waveform ④) after CUE or REV should rise within two seconds.

⑥ RISING CHECK-3

This waveform (waveform ④) should rise within two seconds after the playback button is pressed in the FF or REW mode.

Trigger slope : +

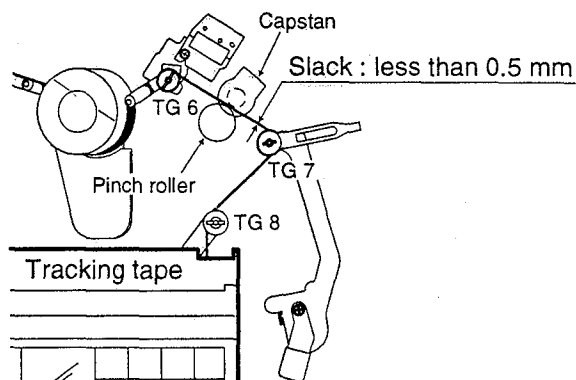


Oscilloscope

THE FINAL ADJUSTMENT OF TG 7 HEIGHT

③ Check the slack of tape around the pinch roller during each rising check.

If the slack is not corrected, adjust the height of TG 7, and readjust electric tension regulator of TG 7. (Adjust from the flowchart on page 5-47.)

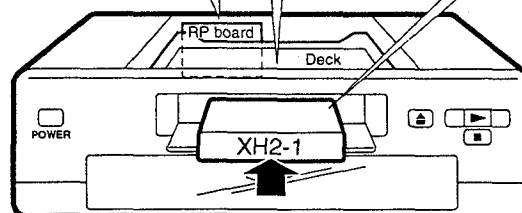


① Connection.

Refer to ② Connection of 6-3-6. Adjustment preparations.

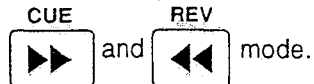
② Playback.

Tracking tape (XH2-1 AST)
Note: Tape Path (Refer to page 5-4) (J-5)

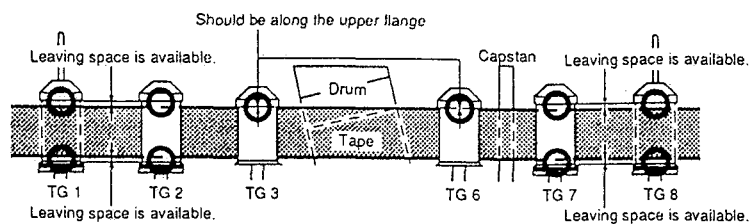


6-3-11. TAPE PATH CHECK

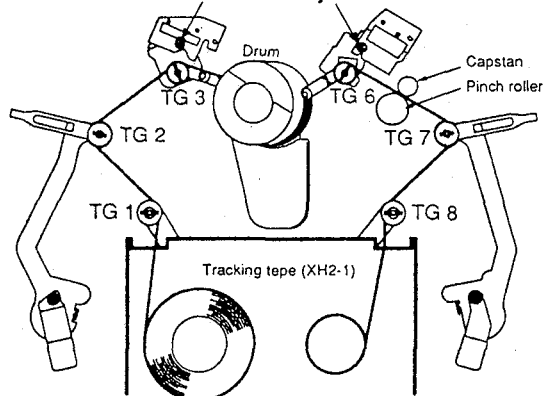
- ② It will be okayed, if there is no curls at the guides, capstan, etc. (○part) in the



The following is ideal, but, it is satisfactory if the RF waveform is normal.

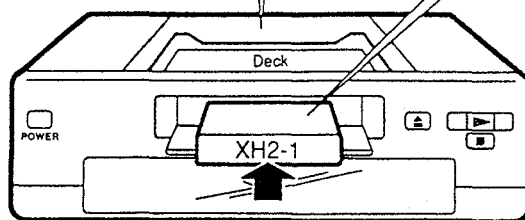


Note : Do not rotate the adjustment screw.



- ① Playback.

Tracking tape
(XH2-1 AST)
Note: Tape Path (Refer
to page 5-4) (J-5)



- ③After adjutment and check, return the data set by the adjusting remote commander to the original value.

5-2. SERVICE MODE

5-2-1. ADJUSTING REMOTE COMMANDER

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Used adjustment remote commander

- 1) Connect the adjusting remote commander to the remote (LANC) terminal.
- 2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-2-1.

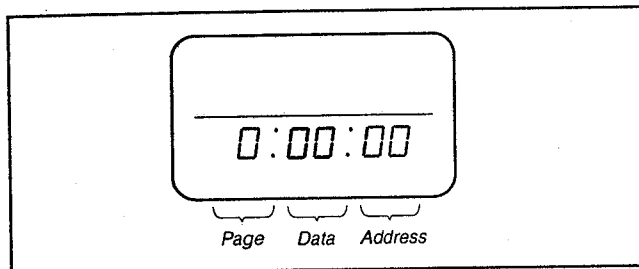


Fig. 5-2-1.

- 4) Operate the adjusting remote commander as follows.

- Changing the page

The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-2-1.

- Changing the address

The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.

- Changing the data (Data setting)

The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.

- Writing the adjustment data

The PAUSE button must be pressed to write the adjustment data (C page, D page and E page) in the nonvolatile memory. (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

5-2-2. DATA PROCESSING

The calculation of the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-2-2. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation																
<div> <div>The lower digits of the hexadecimal notation</div> <div>The upper digits of the hexadecimal notation</div> </div>	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
											(H)	(h)	(c)	(d)	(E)	(F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (H)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B (h)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

① →

② ↓

Note: () indicate the adjusting remote control unit display.

(Example) In the case that the adjusting remote control unit display are BD (bd).

As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection “189” of the ① and ② in the above table is the decimal notation to be calculated. conversion table

Note: () indicate the adjusting remote control unit display.

(Example) In the case that the adjusting remote control unit display are BD (bd).

As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated. conversion table

Table 5-2-2.

5-2-3. SERVICE MODE

1. Emergence Memory Address

Page C	Addersses 30 to 3B
--------	--------------------

Address	Contents
30	EMG code when first error occurs
32	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
33	Lower: MSW code to be moved when first error occurs
34	EMG code when second error occurs
36	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
37	Lower: MSW code to be moved when second error occurs
38	EMG code when last error occurs
3A	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
3B	Lower: MSW code to be moved when last error occurs

When no error occurs in the unit, data 00 is written in the above addresses (30 to 3B). When the first error occurs in the unit, the data corresponding to the error is written in the first emergency address (30 to 33). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (34 to 37).

Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (38 to 3B). Consequently, addresses 38 to 3B are updated each time errors occur.

Note 1: After completing adjustments, be sure to rewrite the data of addresses 30 to 3B to 00.

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 00 to page: C, address: 30, and press the PAUSE button of the adjusting remote commander.
- 3) Set data: 00 to page: C, address: 31, and press the PAUSE button of the adjusting remote commander.
- 4) Set data: 00 to page: C, address: 32, and press the PAUSE button of the adjusting remote commander.
- 5) Set data: 00 to page: C, address: 33, and press the PAUSE button of the adjusting remote commander.
- 6) Set data: 00 to page: C, address: 34, and press the PAUSE button of the adjusting remote commander.
- 7) Set data: 00 to page: C, address: 35 and press the PAUSE button of the adjusting remote commander.
- 8) Set data: 00 to page: C, address: 36 and press the PAUSE button of the adjusting remote commander.
- 9) Set data: 00 to page: C, address: 37 and press the PAUSE button of the adjusting remote commander.
- 10) Set data: 00 to page: C, address: 38, and press the PAUSE button of the adjusting remote commander.
- 11) Set data: 00 to page: C, address: 39, and press the PAUSE button of the adjusting remote commander.
- 12) Set data: 00 to page: C, address: 3A, and press the PAUSE button of the adjusting remote commander.
- 13) Set data: 00 to page: C, address: 3B, and press the PAUSE button of the adjusting remote commander.
- 14) Set data: 00 to page: 0, address: 01, and press the PAUSE button of the adjusting remote commander.

1-1. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in addresses 30, 34, 38. The type of error indicated by the code are shown in the following table.

Code	Error Type
00	No error (Initial state)
10	Loading motor time-out during LOAD
11	Loading motor time-out during UNLOAD
20	Reel motor error
22	T reel error
23	S reel error
24	Swing error
32	Error during normal capstan rotation
33	Cassette compartment LOAD error
35	Cassette compartment UNLOAD error
40	FG error during drum start-up
42	FG error during normal drum rotation
50	DEW detection
52	Wet DEW detection
60	Electrical tension regulator error

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts on page 5-88.

3-1. PREPARATIONS BEFORE ADJUSTMENT

3-1-1. Equipment Used

- 1) TV monitor
- 2) Oscilloscope with 2-phenomenon, 30 MHz band, and delay mode
(Unless specified otherwise, use a 10 : 1 probe.)
- 3) Frequency counter
- 4) Digital voltmeter
- 5) Audio generator
- 6) Audio level meter
- 7) Audio distortion meter
- 8) Audio attenuator
- 9) Pattern generator
- 10) Digital camera recorder
DCR-VX1000
- 11) Vectorscope
- 12) Alignment tape
 - SW/OL reference (XH2-3)
Parts code: 8-967-997-11
 - Audio operation check for NTSC (XH5-3)
Parts code: 8-967-997-51
 - System operations check for NTSC (XH5-5)
Parts code: 8-967-997-61
 - Audio operation check for PAL (XH5-3P)
Parts code: 8-967-997-55
 - System operation check for PAL (XH5-5P)
Parts code: 8-967-997-66
 - BIST check For NTSC (XH5-6)
Parts code: 8-967-997-71
 - BIST check For PAL (XH5-6P)
Parts code: 8-967-997-76
- 13) Adjusting remote control unit (J-6082-053-B)
- 14) Multi CPC-8 jig (J-6082-388-A). (CN775 of the RP-228board)
- 15) Extension board
 - For extension between CN 101 of the RP-228board and CN 412 of the JC-19 board.
 - For extension between CN102 of the RP-228board and CN411 of the JC-19 board. (30P, 0.5 mm) (J-6082-270-A)
 - For extension between CN771 of the RP-228 board and drum (M901) (10P, 1 mm) (J-6082-064-A)
 - For extension between CN002 of the CM-56 board and CN 501 of the VA-102 board (8P, 1mm) (J-6082-058-A)
 - For extension between CN006 of the CM-56 board and the reel motor (M904) (15P, 1.25 mm) (J-6902-354-A)
 - For extension between CN001 of the CM-56 board and CN101 of the MD-63 board (16P, 1mm) (J-6082-020-A)

NTAC: DSR-20

PAL : DSR-20P

3-1-2. Connection of Equipment

According to the specification for the input terminal (S VIDEO input, VIDEO input, or DV input), connect measuring equipment as shown in Fig. 5-3-1, and make adjustment.

The input terminal is specified in () of the signal column.

Any input terminal can be used unless otherwise specified.

To switch between S VIDEO INPUT and VIDEO INPUT, use the VIDEO SELECT button on the front panel.

Note 1: In adjustments specifying for the S VIDEO input to be used, using the VIDEO input would disable the product specifications of this unit from being satisfied. Always use the input signal specified.

Note 2: If adjustments are used with the VTR with the S video output terminal as the signal source, the performance of this unit may be affected by the VTR. Use a pattern generator with a Y/C separator terminal as much as possible.

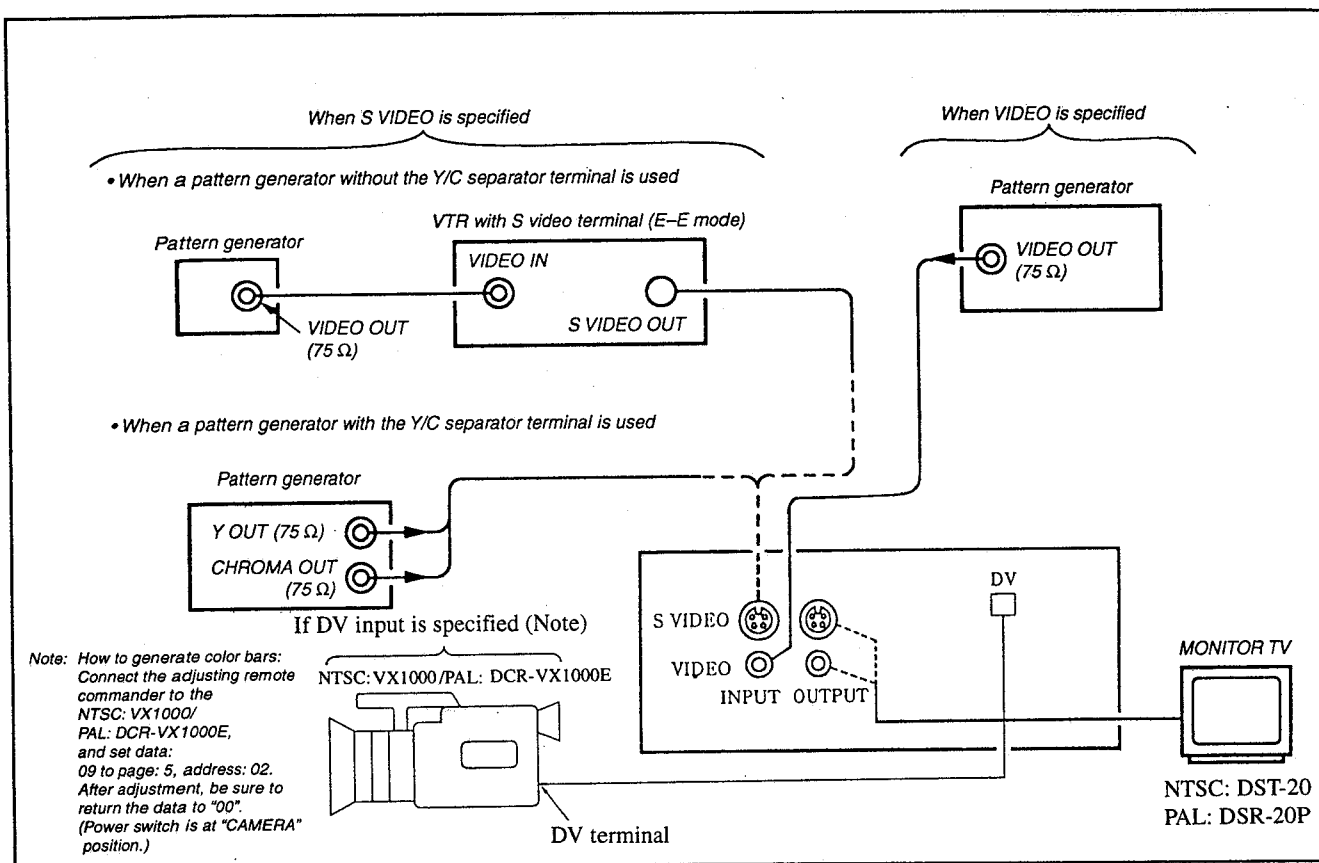


Fig. 5-3-1.

3-1-3. Adjusting Connectors (RP-228 Board CN775)

Some of the adjusting points of the video section are concentrated at CN775 of the RP-228 board. Connect the instruments via the multi CPC-8 jig (J-6082-388-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	TCK	2	TMS
3	TDI	4	GND
5	TRACK ID	6	JSWP
7	GND	8	RF MONIITOR
9	VCC2	10	AGC IN
11	VCC1	12	EQ IN
13	LOCK	14	REF OUT
15	ENV OUT	16	GND
17	TDO	18	C1ERP
19	FLTD	20	GND

Table 5-3-1.

3-1-4. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjustments, the video output signal must satisfy the given specifications.

1. S VIDEO Input

Connect the oscilloscope to the Y signal terminal of the S VIDEO input terminal, and check that the sync signal of the Y signal is approximately $<0.286> [0.30]$ V and that the amplitude of the video section is approximately $<0.714> [0.70]$ V. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO input terminal, and check that the burst signal amplitude of the chroma signal is approximately $<0.286> [0.30]$ V and flat, and that the red signal amplitude of the chroma signal is approximately $<0.66> [0.67]$ V. The Y and chroma signals used in the adjustment are shown in Fig. 5-3-2.

< >: NTSC model

[]: PAL model

2. VIDEO Input

Connect the oscilloscope to the VIDEO input terminal, and check that the sync signal amplitude of the video signal is approximately $<0.286> [0.30]$ V, the amplitude of the video section is approximately $<0.714> [0.70]$ V, the amplitude of the burst signal is approximately $<0.286> [0.30]$ V and flat, and that the red signal amplitude of the chroma signal is approximately $<0.66> [0.67]$ V.

The video signal (color bar) used for adjustments is shown in Fig. 5-3-3.

< >: NTSC model

[]: PAL model

NTSC: DST-20

PAL: DSR-20P

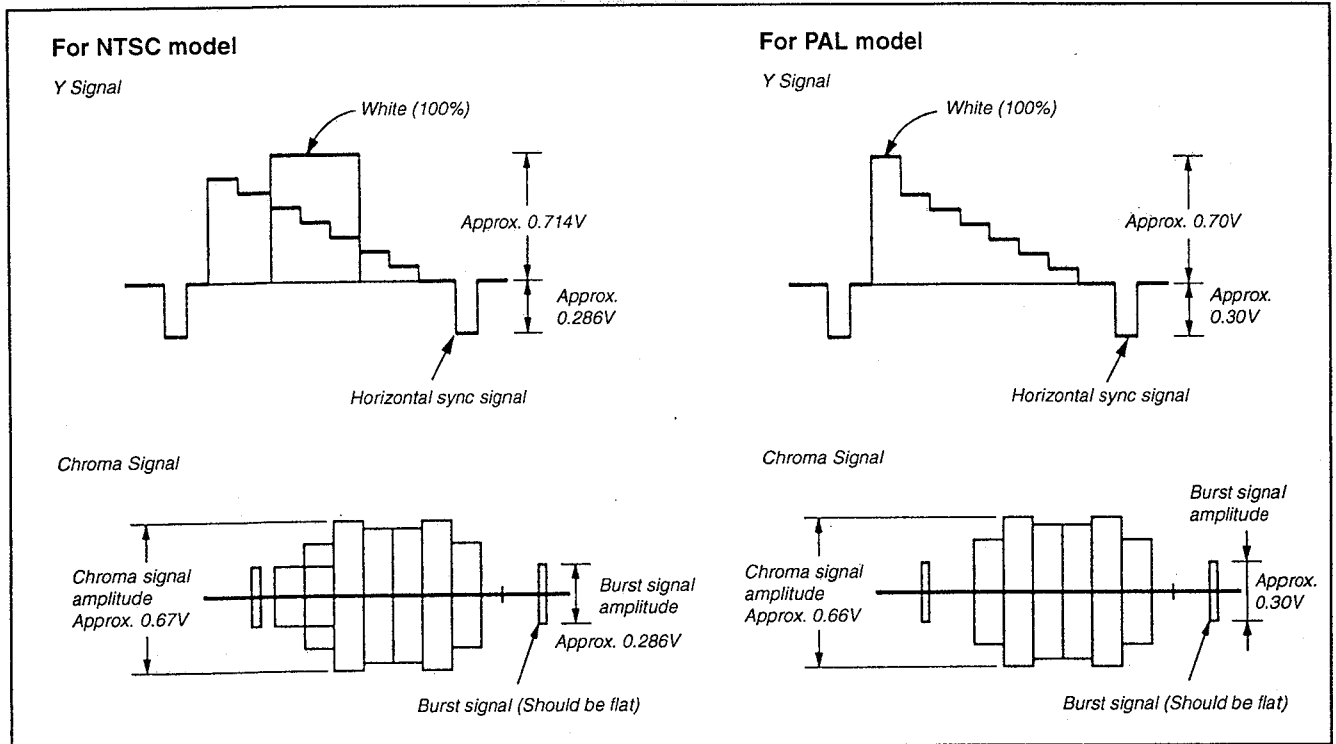


Fig. 5-3-2. Color Bar Signal of Pattern Generator

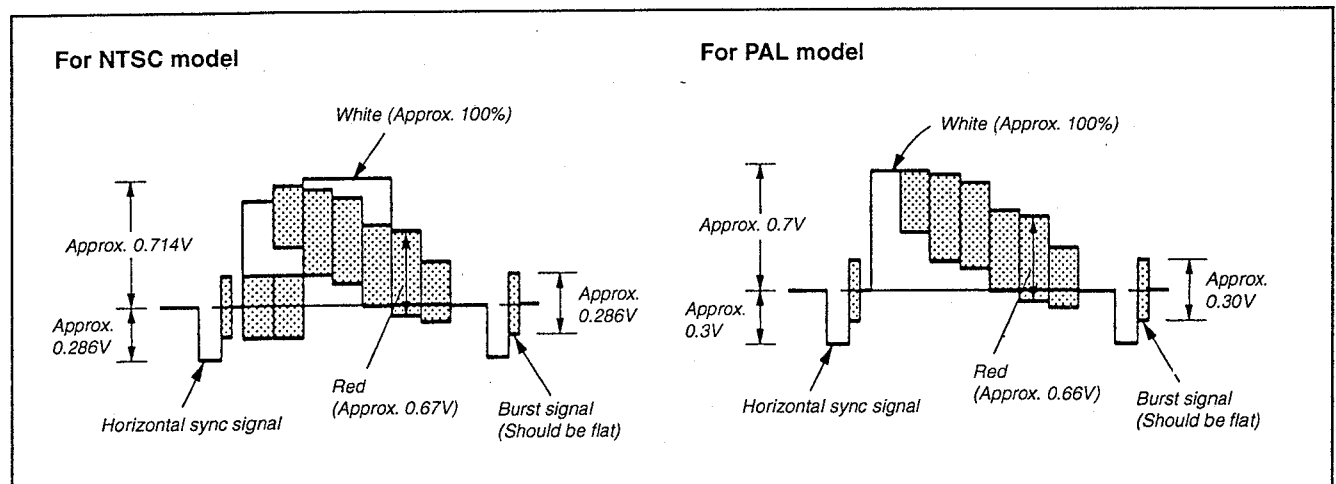


Fig. 5-3-3. Color Bar Signal of Pattern Generator

3-1-5. Alignment Tapes

Use the alignment tapes shown in the following table.

Use tapes specified in the signal column of each adjustment.

Name	Use
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3 (NTSC), XH5-3P (PAL))	Audio system adjustment
System operation check (XH5-5 (NTSC), XH5-5P (PAL))	Operation check
BIST check (XH5-6: NTSC, XH5-6P: PAL)	BIST check

Table 5-3-2.

Fig. 5-3-4. shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check (NTSC).

Note: Measure with video terminal (Terminated at 75 Ω)

NTSC: DST-20

PAL: DSR-20P

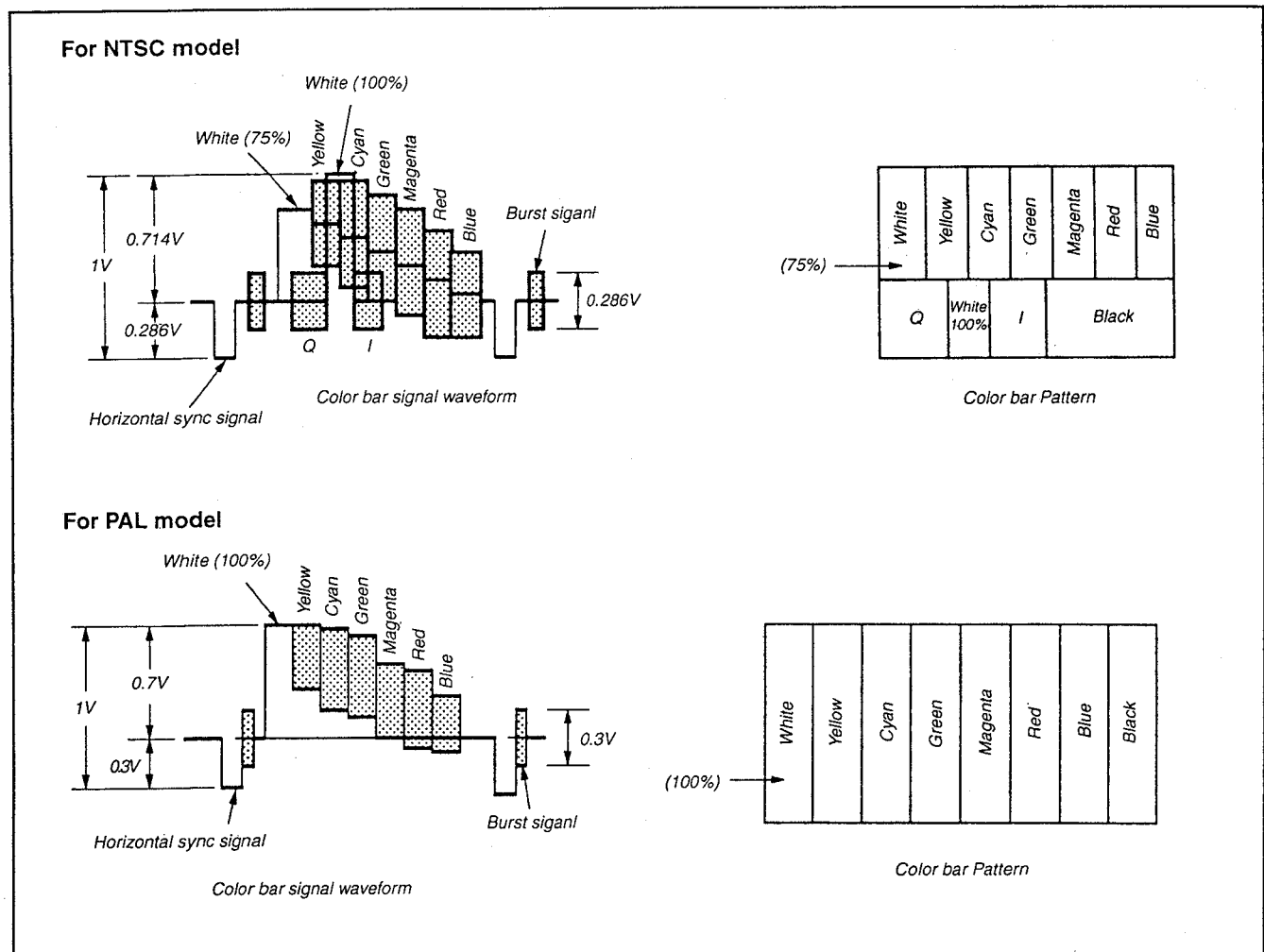


Fig. 5-3-4. Color Bar Signal of Alignment Tapes

3-1-6. Input/Output Level and Impedance

LINE IN

Video input	BNC connector Input signal: 1 Vp-p (75 ohms unbalanced)
S Video input	Mini DIN 4-pin Luminance signal: 1 Vp-p (75 ohms unbalanced) Chrominance signal: 0.286 Vp-p (NTSC), 0.3 Vp-p (PAL), (75 ohms unbalanced)
Audio input	Phono jack (L, R) Input level: 2 Vrms (full bit) Input impedance: more than 47 kohms

LINE OUT

Video output	BNC connector Output signal: 1 Vp-p (75 ohms unbalanced)
S Video output	Mini DIN 4-pin Luminance signal: 1 Vp-p (75 ohms unbalanced) Chrominance signal: 0.286 Vp-p (NTSC), 0.3 Vp-p (PAL), (75 ohms unbalanced)
Audio output	Phono jack (L, R) Output level: 2 Vrms (full bit) Output impedance: less than 10 kohms

3-2. POWER SUPPLY SYSTEM ADJUSTMENT

1. Power Supply Voltage Check Power Block (U-2 Board)

Mode	Playback
Measuring Instrument	Digital voltmeter
UNSW6V Check	
Measuring Point	Pin ① of CN11
Specified Value	6.0±0.5 Vdc
UNSW3.1V Check	
Measuring Point	Pin ② of CN11
Specified Value	3.1±0.2 Vdc
VIDEO5V, AUDIO5V Check	
Measuring Point	Pin ③, ⑦ of CN11
Specified Value	5.0±0.12 Vdc
SW3.1V Check	
Measuring Point	Pin ④ of CN11
Specified Value	3.1±0.1 Vdc
VIDEO-5V, AUDIO-5V Check	
Measuring Point	Pin ⑥, ⑨ of CN11
Specified Value	-5.0±0.12 Vdc
SW5V Check	
Measuring Point	Pin ③ of CN11
Specified Value	5.0±0.12 Vdc
DRUM6V Check	
Measuring Point	Pin ④ of CN10
Specified Value	6.0±0.5 Vdc
MOTOR14V Check	
Measuring Point	Pin ⑥ of CN10
Specified Value	14.0±2 Vdc

2. Video/Audio Block Power Supply Voltage Check Power Block (U-2 Board)

Mode	Playback
Measuring Instrument	Digital voltmeter
UNSW6V Check	
Measuring Point	Pin ② of CN12
Specified Value	6.0±0.5 Vdc
UNSW3.1V Check	
Measuring Point	Pin ④ of CN12
Specified Value	3.1±0.2 Vdc
UNSW-9V Check	
Measuring Point	Pin ⑦ of CN12
Specified Value	-9±0.5 Vdc
UNSW14V Check	
Measuring Point	Pin ⑧ of CN12
Specified Value	14±2.0 Vdc
UNSW12V Check	
Measuring Point	Pin ③ of CN12
Specified Value	12.0±1.0 Vdc

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initializing the C, D, E Page Data

Note 1: If "Initializing the C, D, E Page Data" is performed, all data of the D page, E page and F page will be initialized.

Note 2: If the C, D, E page data has been initialized, "Modification of C, D, E Page Data" and all adjustments need to be performed again.

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00~4F
Adjustment Page	C
Adjustment Address	00~6F
Adjustment Page	E
Adjustment Address	00~3B

2. Input of D page Initial Data

Input method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 2D to page: 2, address: 00, and press the PAUSE button on the adjusting remote commander.
- 3) Set data: 2D to page: 2, address: 01, and press the PAUSE button on the adjusting remote commander.
- 4) Confirm that the data on page: 2, address: 02 is "01".
- 5) Modify the D page data. (Refer to D page addresses)

3. Input of C page Initial Data

Input method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 01 to page: 4, address: 02, and press the PAUSE button on the adjusting remote commander.
- 3) Confirm that the data on page: 4, address: 02 change in the order of "01" → "03" → "05" → "00".
- 4) Modify the C page data. (Refer to C page addresses)

4. Input of E page Initial Data

Input method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 2D to page: 5, address: 00, and press the PAUSE button on the adjusting remote commander.
- 3) Set data: 2D to page: 5, address: 01, and press the PAUSE button on the adjustment remote commander.
- 4) Confirm that the data on page: 5, address: 02 is "01".
- 5) Modify the E page data. (Refer to E page addresses)

5. Modification of D, E, Page Data

If the D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note: If copy the data built in the different model, this set may not operate.

- 3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
- 5) After completing "Modification of D, E, F Page Data", select page: 0, address: 01, and set data: 00. Also perform all adjustments.

6. Page D Address List

Note 1: Fixed data 1: Initialized data.
Fixed data 2: Modified data.

Address	Initial Value	Remark
00 to 0F		
10 to 12	Fixed data 1 (Initial data)	
13	Fixed data 2 (Changed data. Read from same model and copy it.)	
14	Fixed data 1 (Initial data)	
15 to 18	Fixed data 2 (Changed data. Read from same model and copy it.)	
19	Fixed data 1 (Initial data)	
1A to 1E	Fixed data 1 (Initial data)	
1F	Fixed data 2 (Changed data. Read from same model and copy it.)	
20 to 29	Fixed data 1 (Initial data)	
2A, 2B	Fixed data 1 (Initial data)	
2C to 2F	Fixed data 2 (Changed data. Read from same model and copy it.)	
30 to 32	Fixed data 1 (Initial data)	
33	59	IC422 27 MHz XTAL fo adjustment
34	19	Playback CR signal level adjustment/ Encoder R-Y input level adjustment
35	37	Playback CB signal level adjustment/ Encoder B-Y input level adjustment
36	18	Playback Y signal level adjustment/ Y output level adjustment
37 to 39	Fixed data 1 (Initial data)	
3A to 3F	Fixed data 1 (Initial data)	
40	Fixed data 1 (Initial data)	
41	00	Playback burst level adjustment
42	Fixed data 2 (Changed data. Read from same model and copy it.)	
43	Fixed data 1 (Initial data)	
44 to 64	Fixed data 2 (Changed data. Read from same model and copy it.)	
47 to 49	Fixed data 1 (Initial data)	
4A	Fixed data 2 (Changed data. Read from same model and copy it.)	
4B to 4F	Fixed data 1 (Initial data)	

Table 5-2-3.

7. Page C Address List

Note 1: Fixed data 1: Initialized data.
Fixed data 2: Modified data.

Address	Initial Value	Remark
00	Fixed data 1 (Initial data)	
01	Fixed data 2 (Changed data. Read from same model and copy it.)	
02 to 07	Fixed data 1 (Initial data)	
08	Fixed data 2 (Changed data. Read from same model and copy it.)	
09	Fixed data 1 (Initial data)	
0A to 0C	Fixed data 1 (Initial data)	
0D	Fixed data 2 (Changed data. Read from same model and copy it.)	
0E, 0F	Fixed data 1 (Initial data)	
10 to 19	Fixed data 1 (Initial data)	
1A to 1F	Fixed data 1 (Initial data)	
20 to 29	Fixed data 1 (Initial data)	
2A to 2F	Fixed data 1 (Initial data)	
30 to 39	00	Emergency memory address
3A, 3B	00	Emergency memory address
3C, 3D	F8	PLL fo adjustment
3E, 3F	70	Recording current adjustment
40, 41	C0	AEQ adjustment
42, 43	90	AEQ adjustment
44	86	AGC Center level adjustment
45	Fixed data 1 (Initial data)	
46	86	PLL Capture range adjustment
47	C8	CLK delay adjustment
48, 49	Fixed data 1 (Initial data)	
4A, 4B	Fixed data 1 (Initial data)	
4C to 4F	00	Switching position adjustment
50	54	Capstan FG duty adjustment
51	31	Capstan FG duty adjustment
52 to 59	Fixed data 1 (Initial data)	
5A	00	AEQ adjustment
5B to 5F	Fixed data 1 (Initial data)	
60 to 69	Fixed data 1 (Initial data)	
6A to 6F	Fixed data 1 (Initial data)	

Table 5-2-4.

8. Page E Address List

Note 1: Fixed data 1: Initialized data.
Fixed data 2: Modified data.

Address	Initial Value	Remark
00 to 1B	Fixed data 1 (Initial data)	
1C	Fixed data 2 (Changed data. Read from same model and copy it.)	
1D	8D	Battery down adjustment and check
1E	86	
1F	80	
20 to 23	Fixed data 1 (Initial data)	
24	Fixed data 2 (Changed data. Read from same model and copy it.)	
25 to 3F	Fixed data 1 (Initial data)	

Table 5-2-5.

3-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustments (CM-56 Board)

Mode	Playback
Signal	SW/OL reference tape
Measurement Point	Page: 3, addresses: 03 on display data of adjusting remote commander
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	4C, 4D, 4E, 4F
Specified Value	"00"

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 0E to page: 3, address: 01, and press the PAUSE button on the adjusting remote commander.
- 3) Confirm that the data on page: 3, address: 02 changes from "0E" to "00".
- 4) Confirm that the data on page: 3, address: 03 is "00".
- 5) Turn OFF the HOLD switch on the adjusting remote commander and wait for more than 2 seconds. (The adjusted data are automatically written to page: C, address: 4C ~ 4F.)
- 6) Turn ON the HOLD switch on the adjusting remote commander.
- 7) Set data: 00 to page: 0, address: 01.
- 8) Stop the tape playback.
- 9) Turn the POWER switch OFF.

2. Capstan FG duty Adjustment (CM-56 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Page: 3, addresses: 03 on display data of adjusting remote commander
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	50, 51
Specified Value	"00"

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 15 to page: 3, address: 01, and press the PAUSE button on the adjusting remote commander.
- 3) Confirm that the data on page: 3, address: 02 changes from "15" to "00".
- 4) Confirm that the data on page: 3, address: 03 is the following value.
When "00": Normal
When "01": Faulty
Perform the following adjustment only when "00" is displayed.
- 5) Read the data on page: 3, address: 04 and 05, and take the values as D_{04} and D_{05} respectively.
(The data on page: 3, address: 05 must be 2F ~ 3F.)
- 6) Set D_{04} to page: C, address: 50, and press the PAUSE button on the adjusting remote commander.
- 7) Set D_{05} to page: C, address: 51, and press the PAUSE button on the adjusting remote commander.
- 8) Set data: 00 to page: 3, address: 01, and press the PAUSE button on the adjusting remote commander.
- 9) Set data: 00 to page: 0, address: 01.
- 10) Stop the tape playback.
- 11) Turn the POWER switch OFF.

3-5. VIDEO SYSTEM ADJUSTMENTS

3-5-1. RP-228 Board Adjustments

1. Recording Current Adjustment (RP-228 Board)

Mode	E-E
Measurement Point	ODDch adjustment CH1: Pin ⑥ of CN771 (CL812) CH2: Pin ⑤ of CN771 (CL813) EVENch adjustment CH1: Pin ② of CN771 (CL816) CH2: Pin ③ of CN771 (CL815)
Measuring Instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment Page	C
Adjustment Address	3E, 3F
Specified Value	$A=4.1 \pm 0.1$ Vp-p

Connection: Disconnect CN771 and connect as follows.

- 1) ODDch adjustment: Connect a 180 Ω resistor between Pin ⑥ of CN771 (CL812) and Pin ⑤ of CN771 (CL813).
 - 2) EVENch adjustment: Connect a 180 Ω resistor between Pin ② of CN771 (CL816) and Pin ③ of CN771 (CL815).
- 180 Ω resistor (Parts code: 1-249-408-11)

Adjusting method:

- 1) Equalize the vertical range of CH1 and CH2 of the oscilloscope.
- 2) Set the oscilloscope to the ADD mode, and set CH2 to the INV mode.
- 3) Set data: 01 to page: 0, address: 01.
- 4) Set data: 0C to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
- 5) Set data: 01 to page: 3, address: 34.
- 6) Change the data of page: C, address: 3F (ODDch adjustment) or address: 3E (EVENch adjustment), and adjust the signal voltage (A) to the specified value, press the PAUSE button on the adjustment remote commander.
- 7) Set data: 04 to page: 3, address: 34.
- 8) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
- 9) Set data: 00 to page: 0, address: 01.

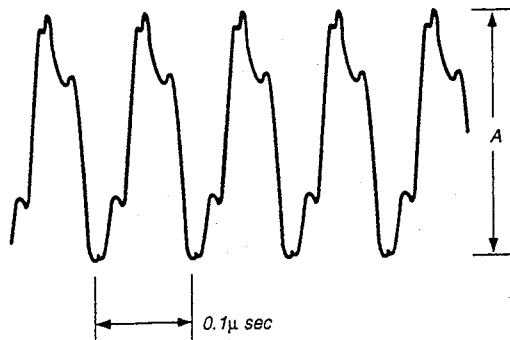


Fig. 5-3-5.

2. PLL fo Adjustment (RP-228 Board)

Mode	E-E
Measurement Point	Displayed data of page: 3,
Measuring Instrument	address: 04
Adjustment Page	C
Adjustment Address	3D, 3C
Specified Value	Displayed data is "FD" to "FF", "00" to "03" ("FF", "00" are center values)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 05 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
- 3) Set data: 04 to page: 3, address: 36.
- 4) Check that the average value D04 of the displayed data of page: 3, address: 04 is "FD" to "FF", "00" or "03". If outside this range, change the data of page: C, address: 3C, and check again.
 [If D04 is "80" to "FC"]
 Decrease the data of page: C, address: 3C. (As the data is to be rewritten, press the PAUSE button of the adjusting remote commander.)
 [If D04 is "04" to "7F"]
 Increase the data of page: C, address: 3C. (As the data is to be rewritten, press the PAUSE button of the adjusting remote commander.)
- 5) Set data: 05 to page: 3, address: 36.
- 6) Check that the average value D04 of the displayed data of page: 3, address: 04 is "FD" to "FF" or "00" to "03". If outside this range, change the data of page: C, address: 3D, and check again.
 [If D04 is "80" to "FC"]
 Decrease the data of page: C, address: 3D. (As the data is to be rewritten, press the PAUSE button of the adjusting remote commander.)
 [If D04 is "04" to "7F"]
 Increase the data of page: C, address: 3D. (As the data is to be rewritten, press the PAUSE button of the adjusting remote commander.)
- 7) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
- 8) Set data: 02 to page: 3, address: 36.

3. CLK DELAY Adjustment (RP-228 Board)

Mode	Recording/playback
Signal	Color bar
Measurement Point	CH1: Pin ⑮ of CN775 (C1ERP) CH2: Pin ⑥ of CN775 (JSWP)
Measuring Instrument	Oscilloscope Trigger source: CH2
Adjustment Page	C
Adjustment Address	47

Adjusting method:

- 1) Record color bar signal for two minutes on any tape.
- 2) Set data: 01 to page: 0, address: 01.
- 3) Write the following data in page: C, addresses: 40 to 43, 47, 4B, 5A.
 (To write the data, press the PAUSE button of the adjusting remote commander each time data is set.
 Page: C, address: 40, data: C0
 Page: C, address: 41, data: C0
 Page: C, address: 42, data: 90
 Page: C, address: 43, data: 90
 Page: C, address: 47, data: C8
 Page: C, address: 4B, data: 80
 Page: C, address: 5A, data: 00
- 4) Playback the part recorded with the color bar.
- 5) Increase the data of page: C, address: 47, read the data D₁ when the CH1 pulse is set to the whole audio and video areas.
- 6) Decrease the data of page: C, address: 47, and read the data D₂ when the CH1 pulse is set to the whole audio and video areas.
- 7) Obtain the average value of D₁ and D₂, and take it as D₃.
- 8) Set D₃ to page: C, address: 47, and press the PAUSE button of the adjusting remote commander.
- 9) Set data: 0E to page: C, address: 4B, and press the PAUSE button of the adjusting remote commander.
- 10) Set data: 8C to page: C, address: 5A, and press the PAUSE button of the adjusting remote commander.
- 11) Set data: 00 to page: 0, address: 01.
- 12) After completing the adjusting, perform "5. AEQ Adjustment".

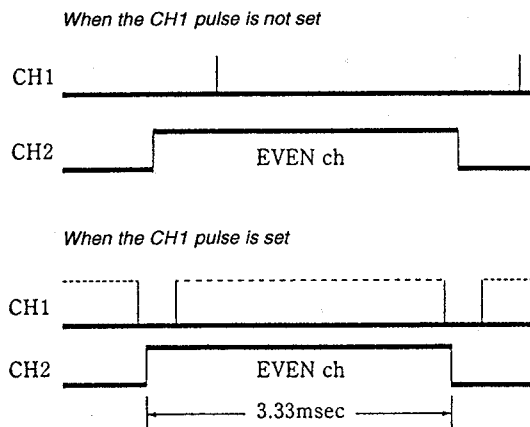


Fig. 5-3-6.

4. AGC Center Level Adjustment (RP-228 Board)

Mode	Recording/playback
Signal	Color bar
Measurement Point	CH1: Pin ⑮ of CN775 (C1ERP) CH2: Pin ⑥ of CN775 (JSWP)
Measuring Instrument	Oscilloscope Trigger source: CH2
Adjustment Page	C
Adjustment Address	44

Adjusting method:

- 1) Record color bar signal for two minutes on any tape.
- 2) Set data: 01 to page: 0, address: 01.
- 3) Write the following data in page: C, addresses: 40 to 44, 4B, 5A.
 (To write the data, press the PAUSE button of the adjusting remote commander each time data is set.
 Page: C, address: 40, data: C0
 Page: C, address: 41, data: C0
 Page: C, address: 42, data: 90
 Page: C, address: 43, data: 90
 Page: C, address: 44, data: 90
 Page: C, address: 4B, data: 80
 Page: C, address: 5A, data: 00
- 4) Playback the part recorded with the color bar signal.
- 5) Increase the data of page: C, address: 44, read the data D₁ when the CH1 pulse is set to the whole audio and video areas.
- 6) Decrease the data of page: C, address: 44, and read the data D₂ when the CH1 pulse is set to the whole audio and video areas.
- 7) Obtain the average value of D₁ and D₂, and take it as D₃.
- 8) Set D₃ to page: C, address: 44, and press the PAUSE button of the adjusting remote commander.
- 9) Set data: 00 to page: C, address: 4B, and press the PAUSE button of the adjusting remote commander.
- 10) Set data: 8C to page: C, address: 5A, and press the PAUSE button of the adjusting remote commander.
- 11) Set data: 00 to page: 0, address: 01.
- 12) After completing the adjusting, perform 5. AEQ Adjustment.

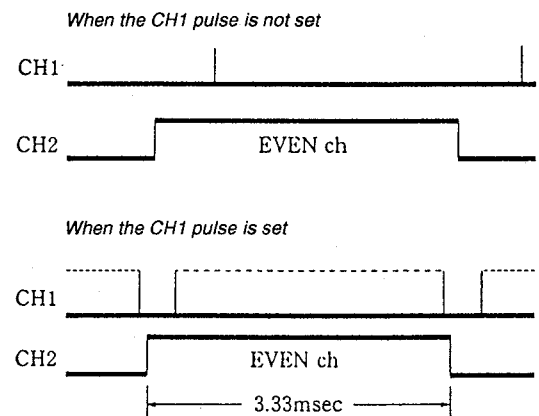


Fig. 5-3-7.

5. AEQ Adjustment (RP-228 Board)

Mode	Recording/playback
Signal	Arbitrary
Measurement Point	Pin ⑧ of CN775 (RF MONITOR) (Note 1)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	40, 41, 42, 43, 5A

Note 1: Connect a 75 Ω resistor between Pin ⑧ and ⑦ (GND) of CN 775.

75 Ω resistor (Parts code: 1-247-804-11)

Note 2: Use the DVM60ME tape or equivalents.

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 80 to page: C, address: 4B, and press the PAUSE button of the adjusting remote commander.
- 3) Write data in page: C, addresses: 40 to 43, and 5A as shown in the following table.

(To write the data, press the PAUSE button of the adjusting remote commander each time data is set.)

Address	Data
40	C0
41	C0
42	90
43	90
5A	00

- 4) Record color bar signal for one minute from the tape top.
- 5) Rewind the tape, and play back the part recorded.
- 6) When the RF output stabilizes, set data: 07 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
- 7) About 20 to 30 seconds after pressing the PAUSE button, check that the data of page: 3, address: 02 changes from "07" to "00".
- 8) Check that the data of page: 3, address: 03 is the following value.
 - When "00" : Normal
 - When "01" : EVENch is faulty
 - When "02" : ODDch is faulty
 - When "03" : EVENch and ODDch are faulty
 Perform the following procedure only when "00" is displayed.
- 9) Read the data of page: 3, address: 04 to 07, and take the values as D04, D05, D06, and D07.

- 10) Set D04 to page: C, address: 40, and press the PAUSE button of the adjusting remote commander.
- 11) Set D05 to page: C, address: 42, and press the PAUSE button of the adjusting remote commander.
- 12) Set D06 to page: C, address: 41, and press the PAUSE button of the adjusting remote commander.
- 13) Set D07 to page: C, address: 43, and press the PAUSE button of the adjusting remote commander.
- 14) Set data: 8C to page: C, address: 5A, and press the PAUSE button of the adjusting remote commander.
- 15) Set data: 00 to page: C, address: 4B, and press the PAUSE button of the adjusting remote commander.
- 16) Set data: 00 to page: 0, address: 01.

6. PLL Capture Range Adjustment (RP-228 Board)

Mode	Recording/playback
Signal	Color bar
Measurement Point	CH1: Pin ⑩ of CN775 (C1ERP) CH2: Pin ⑥ of CN775 (JSWP)
Measuring Instrument	Oscilloscope Trigger source: CH2
Adjustment page	C
Adjustment Address	46

Adjusting method:

- 1) Record color bar signal for two minutes on any tape.
- 2) Set data: 01 to page: 0, address: 01.
- 3) Write the following data in page: C, addresses: 4B and 5A.
(To write the data, press the PAUSE button of the adjusting remote commander each time data is set.)
Page: C, address: 4B, data: 80
Page: C, address: 5A, data: 00
- 4) Playback the part recorded with the color bar signal.
- 5) Set data: 80 to page: C, address: 46, and press the PAUSE button of the adjusting remote commander.
- 6) Set the data of page: C, address: 46 to "60", and check that the pulse is not set at the audio area head of the ERRP waveform's ODDch of the oscilloscope (CH1).
- 7) Set the data of page: C, address: 46 to "A0", and check that the pulse is not set at the audio area head of the C1ERP waveform's ODDch of the oscilloscope (CH1).
After confirming steps 6) and 7), Set data: 80 to page: C, address: 46 again and proceed to step 12).
- 8) If the pulse is set in steps 6) and 7), increase the data of page: C, address: 46 from "80", and read the data D₁ when the pulse is set at the audio area head of CH1.
- 9) Decrease the data of page: C, address: 46 from "80", and read the data D₂ when the pulse is set at the audio area head of CH1.
- 10) Obtain the average value of D₁ and D₂, and take it as D₃.
- 11) Set D₃ to page: C, address: 46, and press the PAUSE button of the adjusting remote commander.
- 12) Set data: 00 to page: C, address: 4B, and press the PAUSE button of the adjusting remote commander.
- 13) Set data: 8C to page: C, address: 5A, and press the PAUSE button of the adjusting remote commander.
- 14) Set data: 00 to page: 0, address: 01.

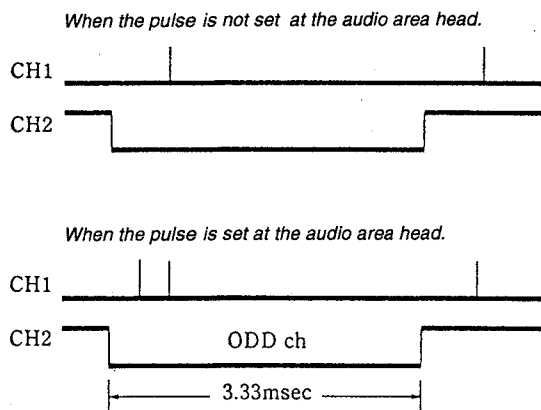


Fig. 5-3-8.

7. IC774 41.85MHzVCO Check (RP-228 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Page: 3, address: 39 on display data of adjustment remote commander
Measuring Instrument	
Adjustment value	"37" ~ "C9" (0.6~2.2Vdc)

Check method:

- 1) Check that the displayed data of page: 3, address: 39 is "37" ~ "C9".

3-5-2. JC-19 Board Adjustments

1. A/D Converter Reference Voltage Adjustment 1 (JC-19 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ⑤ of IC013 (CL061)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV001
Specified Value	$A=2.83 \pm 0.01$ Vdc

Adjusting method:

- 1) Set the VRT voltage (A) to the specified value using RV001.

2. A/D Converter Reference Voltage Adjustment 2 (JC-19 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ③ of IC013 (CL062)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV002
Specified Value	$A=0.96 \pm 0.01$ Vdc

Adjusting method:

- 1) Set the VBT voltage (A) to the specified value using RV002.

3. Y Signal Clamp Reference Voltage Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑧ of IC011 (CL054)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV011
Specified Value	$A=1.150 \pm 0.005$ Vdc

Connection : Connect a jumper wire between Pin ⑥ of IC018 (CL150) and GND.

Adjusting method:

- 1) Set the Y signal clamp reference voltage (A) to the specified value using RV011.

4. CR Signal Clamp Reference Voltage Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑧ of IC010 (CL052)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV010
Specified Value	$A=1.900 \pm 0.005$ Vdc

Connection : Connect a jumper wire between Pin ⑥ of IC018 (CL150) and GND.

Adjusting method:

- 1) Set the CR signal clamp reference voltage (A) to the specified value using RV010.

5. CB Signal Clamp Reference Voltage Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑧ of IC009 (CL053)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV012
Specified Value	$A=1.900 \pm 0.005$ Vdc

Connection : Connect a jumper wire between Pin ⑥ of IC018 (CL150) and GND.

Adjusting method:

- 1) Set the CB signal clamp reference voltage (A) to the specified value using RV012.

6. Playback Y Signal Level Adjustment (JC-19 Board)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑧ of CN104 or pin ② of CN601 on VA-102 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	36
Specified Value	A=0.43±0.04 V (NTSC) A=0.41±0.04 V (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/
PAL: DCR-VX1000E and enter it to the DV terminal.
(How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Changing data on page: D, address: 36, adjust the Y signal level (A) to the specified value.
- 3) Set data: 00 to page: 0, address: 01.

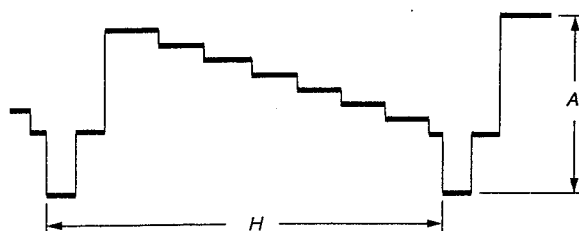


Fig. 5-3-9.

7. Playback CR Signal Level Adjustment (JC-19 Board)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑩ of CN104 or pin ② of CN601 on VA-102 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	34
Specified Value	A=540±10 mV

Note 1: Generate color bar signal with NTSC: DCR-VX1000/
PAL: DCR-VX1000E and enter it to the DV terminal.
(How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Changing data on page: D, address: 34, adjust the CR signal level (A) to the specified value.
- 3) Set data: 00 to page: 0, address: 01.

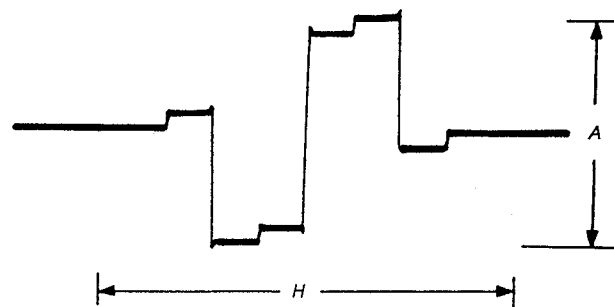


Fig. 5-3-10.

8. Playback CB Signal Level Adjustment (JC-19 Board)

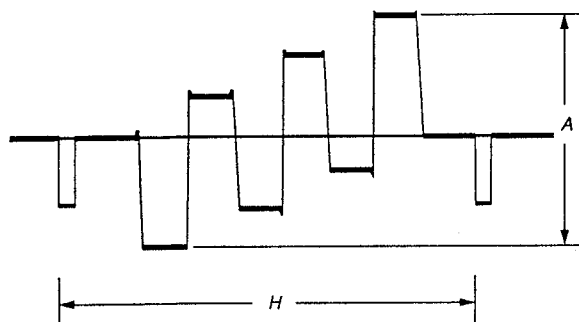
Mode	Recording
signal	DV input (Note 1)
Measurement Point	Pin ⑫ of CN104 or pin ⑬ of CN601 on VA-102 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	35
Specified Value	$A=390\pm 10$ mV

Note 1: Generate color bar signal with NTSC: DCR-VX1000/PAL: DCR-VX1000E and enter it to the DV terminal. (How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Changing data on page: D, address: 35, adjust the CB signal level (A) to the specified value.
- 3) Set data: 00 to page: 0, address: 01.

For NTSC model



For PAL model

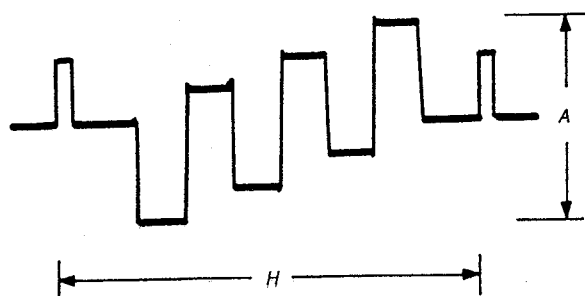


Fig. 5-3-11.

9. IC422 27MHzXTAL fo Adjustment (JC-19 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ② of IC442 (CL479)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	33
Specified Value	$f=13500000\pm 100$ Hz

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Changing data on page: D, address: 33, adjust the clock frequency (f) to the specified value.
- 3) Press the PAUSE button on the adjusting remote commander.
- 4) Set data: 00 to page: 0, address: 01.

10. AFC Preliminary Adjustment (JC-19 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin ② of IC205 (CL214)
Measuring Instrument	Digital voltmeter
Adjusting Element	CT201
Specified Value	$A=1.9 \pm 0.5$ Vdc

Adjusting method:

- 1) Set the DC voltage (A) to the specified value using CT201.

11. AFC Picture Frame Adjustment (JC-19 Board)

Mode	Recording
Signal	Color bar (Video input) (Note 1)
Measurement Point	CH1: Pin ② of IC017 (CL051) CH2: Pin ②⑧ of IC205 (CL222)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	$T = 110 \pm 10$ nsec

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the time difference (T) between the H SYNC falling and AFH rising to the specified value using RV201.

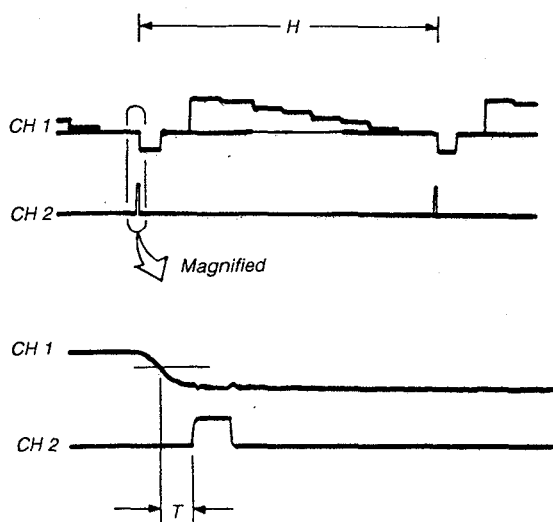


Fig. 5-3-12.

12. AFC Adjustment (JC-19 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin ⑨ of IC205 (CL214)
Measuring Instrument	Digital voltmeter
Adjusting Element	CT201
Specified Value	$A = 1.80 \pm 0.05$ Vdc

Adjusting method:

- 1) Set the DC voltage (A) to the specified value using CT201.

3-5-3. VA-102 Board Adjustment

1. AGC Adjustment (VA-102 Board)

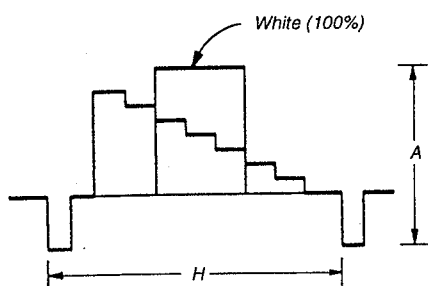
Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑭ of IC205 (CL220)
Measuring Instrument	Oscilloscope
Adjustment Element	RV202
Specified Value	$A=2.00\pm0.02$ V

Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV202.

For NTSC model



For PAL model

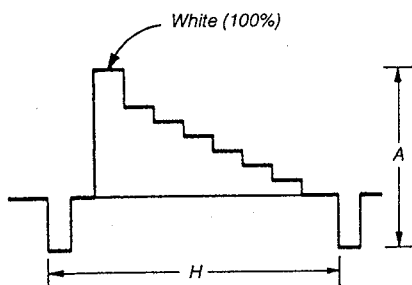


Fig. 5-3-13.

2. Analog E-EY Signal Output Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑬ of CN401 (CL436)
Measuring Instrument	Oscilloscope
Adjustment Element	RV401
Specified Value	$A=1.00\pm0.01$ V

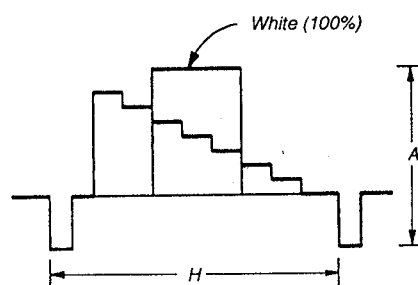
Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the Y signal terminal of the S video output terminal using a 75Ω resistor.
75Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV401.

For NTSC model



For PAL model

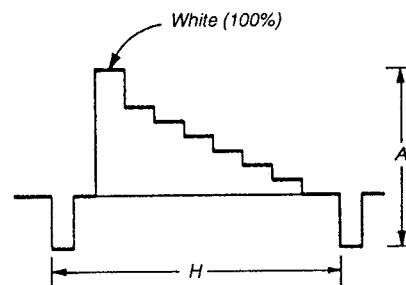


Fig. 5-3-14.

3. Analog E-E Chroma Signal Output Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑩ of IC401 (CL435)
Measuring Instrument	Oscilloscope
Adjustment Element	RV404
Specified Value	A=286±10 mV (NTSC) A=300±10 mV (PAL)

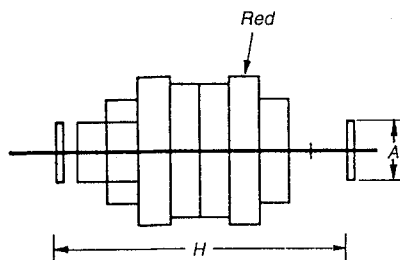
Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the chroma signal terminal of the S video output terminal using a 75 Ω resistor.
75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

1) Set the burst signal level (A) to the specified value using RV404.

For NTSC model



For PAL model

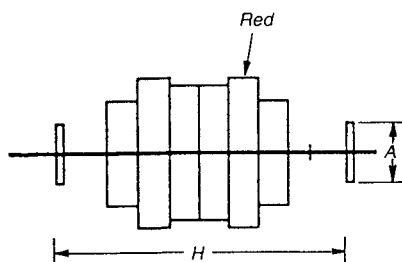


Fig. 5-3-15.

4. Analog E-E VIDEO Signal Output Level Check (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑨ of IC401 (CL434)
Measuring Instrument	Oscilloscope
Specified Value	A=1.00±0.03 V B=280±20 mV (NTSC) B=300±20 mV (PAL)

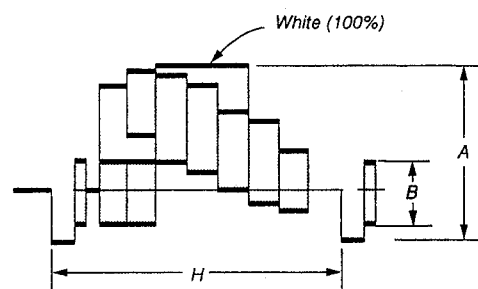
Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the video output terminal using a 75 Ω resistor.
75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

1) Check that the VIDEO signal level (A), (B) is the specified value.

For NTSC model



For PAL model

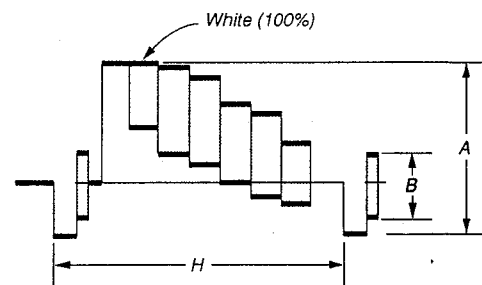


Fig. 5-3-16.

5. Decoder VXO Freerunning Frequency Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 2) (Chroma signal OFF)
Measurement Point	TP201 (CL210)
Measuring Instrument	Frequency counter
Adjustment Element	CT201
Specified Value	$f=3579545\pm30$ Hz (NTSC) $f=4433618\pm20$ Hz (PAL)

Note 1: Connect the frequency counter via high input impedance equipment such as an oscilloscope.

Note 2: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the VXO OSC frequency (f) to the specified value using CT201.

6. Video Input Y/C Separation Adjustment (VA-102 Board)

(1) Y Signal Output Level Adjustment

Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Pin ① of IC202 (CL202)
Measuring Instrument	Oscilloscope
Adjustment Element	RV203
Specified Value	$A=1.00\pm0.01$ V

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

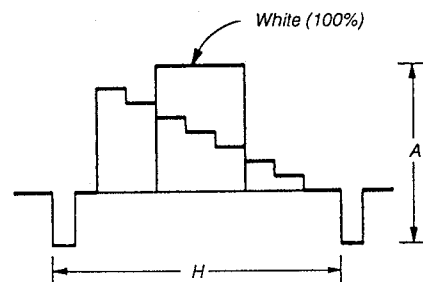
Note 2: Terminate the video output terminal using a 75 Ω resistor.

75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV203.

For NTSC model



For PAL model

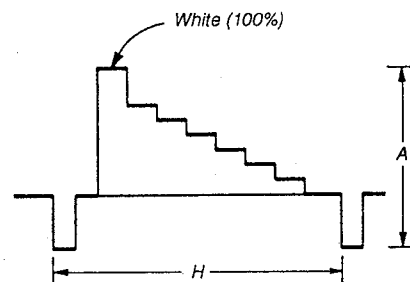


Fig. 5-3-17.

(2) Chroma Signal Output Level Adjustment

Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Emitter of Q202 (CL203)
Measuring Instrument	Oscilloscope
Adjustment Element	RV201
Specified Value	A=286±10 mV (NTSC) A=300±10 mV (PAL)

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

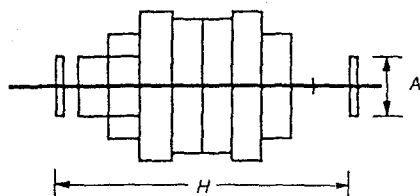
Note 2: Terminate the video output terminal using a 75 Ω resistor.

75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

1) Set the burst signal level (A) to the specified value using RV201.

For NTSC model



For PAL model

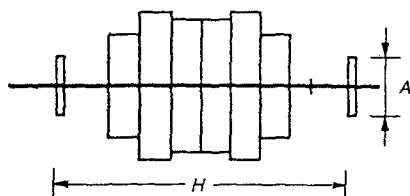


Fig. 5-3-18.

7. Decoder HUE Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑧ of IC102 (CL144)
Measuring Instrument	Oscilloscope
Adjustment Element	RV207
Specified Value	A=B=C

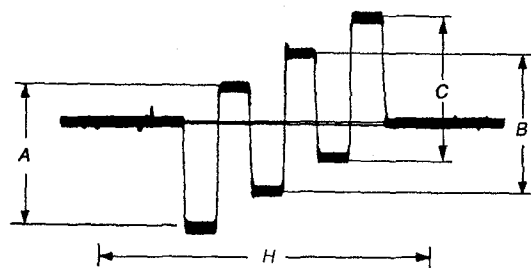
Note 1: Set data: 00 to page: 5, address: 38

Note 2: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

1) Set the amplitude (A), (B), (C) to the same level using RV207.

For NTSC model



For PAL model

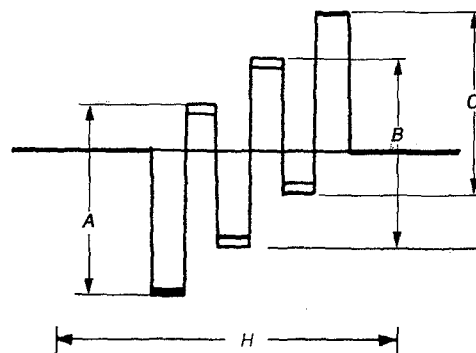


Fig. 5-3-19.

8. REC Y Level Adjustment (VA-102 Board)

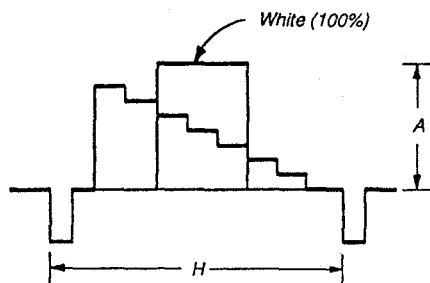
Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑩ of CN102 (CL142)
Measuring Instrument	Oscilloscope
Adjusting Element	RV205
Specified Value	$A=1.55 \pm 0.02$ V

Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV205.

For NTSC model



For PAL model

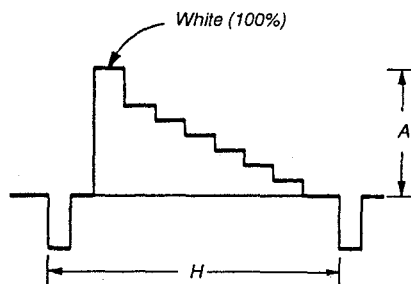


Fig. 5-3-20.

9. REC CR Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑩ of CN102 (CL143)
Measuring Instrument	Oscilloscope
Adjusting Element	RV204
Specified Value	$A=1.25 \pm 0.02$ V (NTSC) $A=1.20 \pm 0.02$ V (PAL)

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the CR signal level (A) to the specified value using RV204.

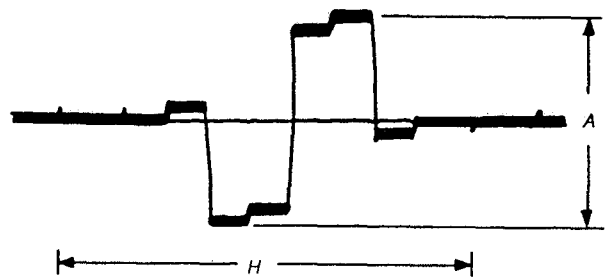


Fig. 5-3-21.

10. REC CB Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑥ of CN102 (CL144)
Measuring Instrument	Oscilloscope
Adjusting Element	RV206
Specified Value	$A=1.20 \pm 0.02$ V

Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the CB signal level (A) to the specified value using RV206.

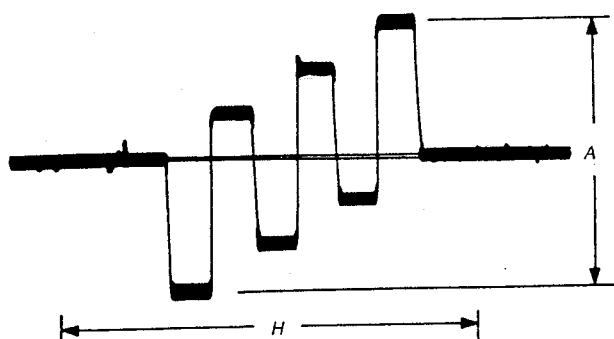


Fig. 5-3-22.

11. Encoder Freerunning Frequency Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 2)
Measurement Point	TP401 (CL426)
Measuring Instrument	Frequency counter
Adjustment Element	CT401
Specified Value	$f=14318182 \pm 100$ Hz (NTSC) $f=17734475 \pm 100$ Hz (PAL)

Note 1: Connect the frequency counter via high input impedance equipment such as an oscilloscope.

Note 2: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the oscillation frequency (f) to the specified value using CT401.

Measurement Point

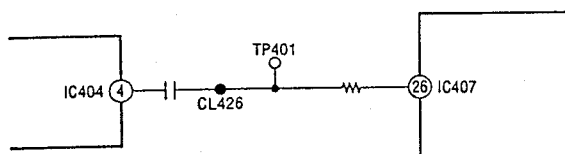


Fig. 5-3-23.

12. Playback Y Level Check (VA-102 Board)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑬ of CN401 (CL436)
Measuring Instrument	Oscilloscope
Specified Value	$A=0.83 \pm 0.02$ V (NTSC) $A=0.825 \pm 0.02$ V (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/PAL: DCR-VX1000E and enter it to the DV terminal. (How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Note 2: Perform this check after confirming that the specified value in the following adjustment of the JC-19 board has been satisfied.

1. Playback Y Signal Level Adjustment

Check method:

- 1) Check that the white (75%) signal level (A) is the specified value.

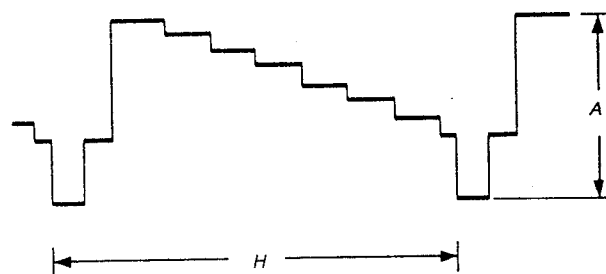


Fig. 5-3-24.

13. Playback Chroma Level Adjustment (VA-102 Board)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑩ of CN401 (CL435)
Measuring Instrument	Oscilloscope
Adjusting Element	RV406
Specified Value	A=670±10 mV (NTSC) A=660±10 mV (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/
PAL: DCR-VX1000E and enter it to the DV terminal.
(How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Note 2: Perform this adjustment after confirming that the specified value in the following adjustment of the JC-19 board has been satisfied.

1. Playback CR Signal Level Adjustment
2. Playback CB Signal Level Adjustment

Adjusting method:

1) Set the red signal level (A) to the specified value using RV406.

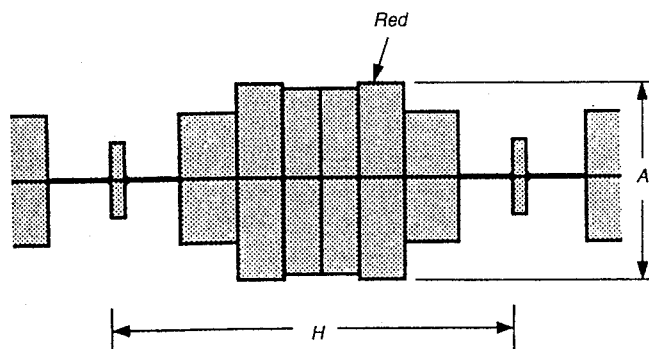


Fig. 5-3-25.

14. Playback Burst Level Adjustment (VA-102 Board) (PAL model only)

Mode	Recording
Signal	DV input (Note 1)
	Pin ⑩ of CN401 (CL435)
Measuring Instrument	Oscilloscope
Adjusting Element	RV402
Specified Value	A=300±10 mV (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/
PAL: DCR-VX1000E and enter it to the DV terminal.
(How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Note 2: Perform this adjustment after confirming that the specified value in the following adjustment of the JC-19 board has been satisfied.

1. Playback CR Signal Level Adjustment
2. Playback CB Signal Level Adjustment

Adjusting method:

1) Set the burst signal level (A) to the specified value using RV402.

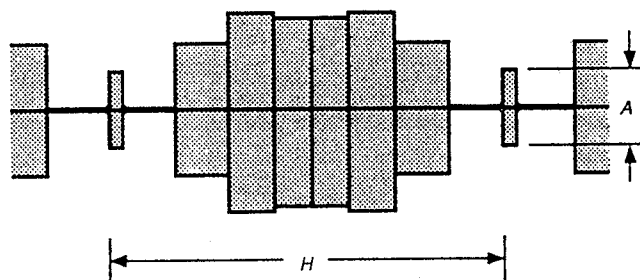


Fig. 5-3-26.

3-5-4. General Adjustments

1. Y Output Level Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar (DV input) Note 1
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope
Adjustment Address	page: D, address: 36
Specified Value	A=0.83±0.01 V (NTSC) A=0.825±0.01 V (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/
PAL: DCR-VX1000E and enter it to the DV terminal.
(How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02.
After adjustment, be sure to return the data to "00".)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Changing data on page: D, address: 36, adjust the Y signal level (A) to the specified value.
- 3) Set data: 00 to page: 0, address: 01.

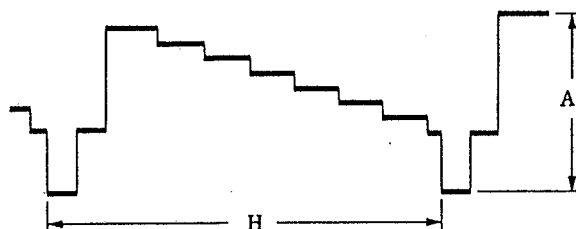


Fig. 5-3-27.

For NTSC model

⊞ : FOR ENCODER R-Y INPUT LEVEL ADJUSTMENT

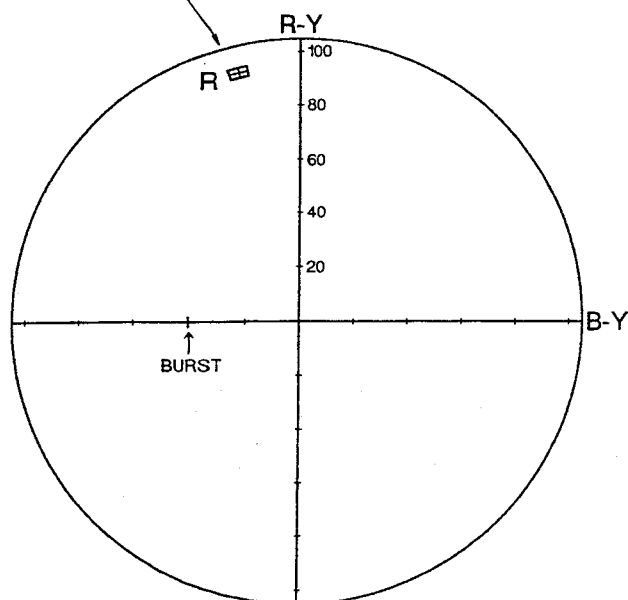


Fig. 5-2-28.

2. Encoder R-Y Input Level Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar (DV input) Note 1
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Address	page: D, address: 34
Specified Value	Phase: 104±2° Gain : 95±5 %

Note 1: Generate color bar signal with NTSC: DCR-VX1000/
PAL: DCR-VX1000E and enter it to the DV terminal.
(How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02.
After adjustment, be sure to return the data to "00".)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Adjust the burst luminance point to the specified position using the PHASE and GAIN knobs of the vectorscope.
- 3) Changing data on page: D, address: 34, adjust a red luminance point to the specified position (inside of thick frame).
- 4) Set data: 00 to page: 0, address: 01.

For PAL model

⊞ : FOR ENCODER R-Y INPUT LEVEL ADJUSTMENT

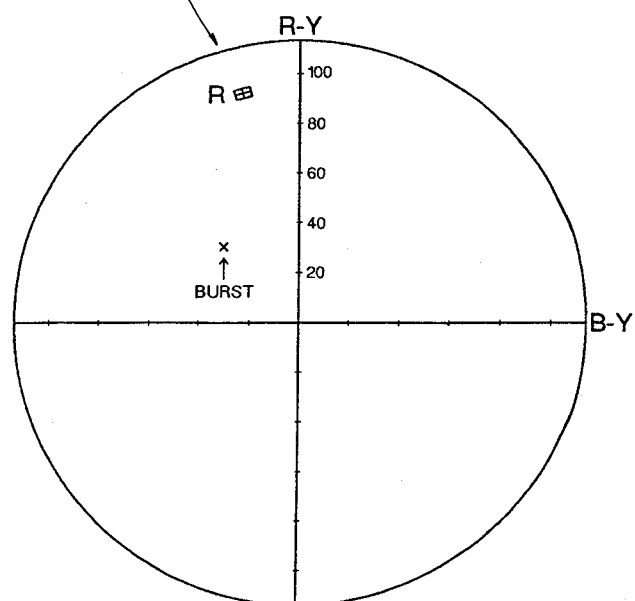


Fig. 5-2-29.

3. Encoder B-Y Input Level Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar (DV input) Note 1
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Address	page: D, address 35
Specified Value	Phase: $348 \pm 2^\circ$ Gain : $66 \pm 5 \%$

Note 1: Generate color bar signal with NTSC: DCR-VX1000/PAL: DCR-VX1000E and enter it to the DV terminal. (How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Adjust the burst luminance point to the specified position using the PHASE and GAIN knobs of the vectorscope.
- 3) Changing data on page: D, address: 35, adjust a blue luminance point to the specified position (inside of thick frame).
- 4) Set data: 00 to page: 0, address: 01.

4. Decoder HUE Input Adjustment (JC-19 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Element	RV207
Specified Value	Phase: $104 \pm 1^\circ$ Gain : $95 \pm 5 \%$

Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set data: 01 to page: 0, address: 01.
- 2) Set data: 20 to page: 2, address: 10.
- 3) Adjust the burst luminance point to the specified position using the PHASE and GAIN knobs of the vectorscope.
- 4) Adjust RV207 so that a red luminance point comes to the specified position (inside of thin frame). At this time, confirm that other color luminance points are inside each phase specified frame (± 2).
- 5) Set data: 00 to page: 2, address: 10.
- 6) Set data: 00 to page: 0, address: 01.

Note : When a red luminance point and a blue luminance point are not at the specified positions, adjust RV204 and RV206 so that they come to the specified positions respectively.

For NTSC model

☐ : FOR DECODER HUE INPUT ADJUSTMENT

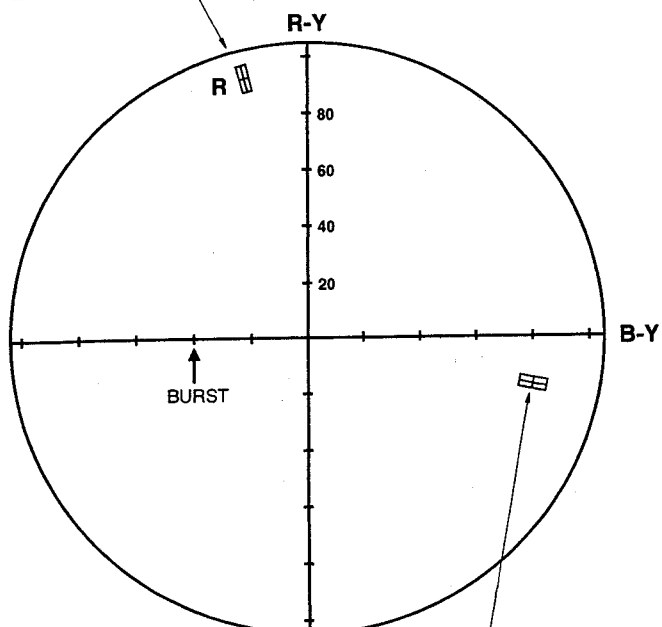


Fig. 5-3-30.

☐ : FOR ENCODER B-Y INPUT LEVEL ADJUSTMENT

For PAL model

☐ : FOR DECODER HUE INPUT ADJUSTMENT

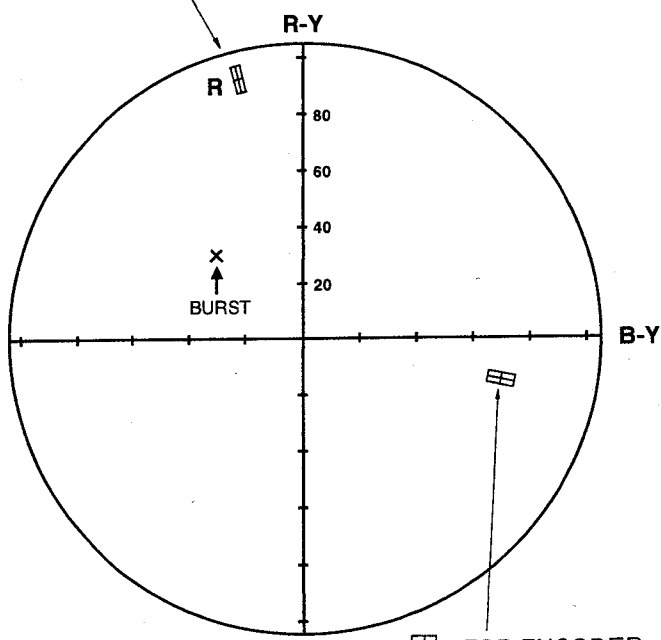


Fig. 5-3-31.

☐ : FOR ENCODER B-Y INPUT LEVEL ADJUSTMENT

3-5-5. BIST Check

1. Playback System Check (JC-19, RP-228 Boards)

- 1) Connect the adjusting remote commander to the JC-19 board, and turn the HOLD switch ON.
- 2) Play back the BIST check tape.

IC411(D1) Playback System Check

- 3) Set data: 04 to page: 4, address: 11, and press the PAUSE button.
- 4) Set data: 00 to page: 4, address: 11, and press the PAUSE button.
- 5) Set data: 03 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
- 6) If IC411 (D1) → IC401 (U1) playback system is normal, the following data are displayed on page: 4, address: 14, 15.

Page	Address	Data
4	15	E5
4	14	11

- 7) If IC411(D1) → IC701 (IND1) playback system is normal, the following data are displayed on page: 4, address: 16, 17.

Page	Address	Data
4	17	C0 or BA
4	16	6E or 04

- 8) If IC411(D1) → IC805 (A1) playback system is normal, the following data are displayed on page: 4, address: 18, 19.

Page	Address	Data
4	19	33 or B2
4	18	59 or 19

IC805 (A1) Playback System Check

- 9) Set data: 10 to page: 4, address: 11, and press the PAUSE button.
- 10) Set data: 00 to page: 4, address: 11, and press the PAUSE button.
- 11) Set data: 04 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
- 12) If IC805 (A1) playback system is normal, the following data are displayed on page: 4, address: 14, 15.

Page	Address	Data
4	15	7B
4	14	B5

IC401 (U1) Playback System Check

- 13) Set data: 08 to page: 4, address: 11, and press the PAUSE button.
- 14) Set data: 01 to page: 4, address: 42, and press the PAUSE button.
- 15) Set data: 07 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
- 16) Set data: 00 to page: 4, address: 42, and press the PAUSE button.
- 17) Set data: 00 to page: 4, address: 11, and press the PAUSE button.

- 18) If IC401 (U1) → IC200 (S1) playback system is normal, the following data are displayed on page: 4, address: 14, 15.

Page	Address	Data
4	15	1E
4	14	F2

- 19) If IC411 (D1) → IC401 (U1) playback system is normal, the following data are displayed on page: 4, address: 16, 17.

Page	Address	Data
4	17	D1
4	16	61

- 20) Perform "Record System Check" successively.

2. Record System Check

Note: Perform "Record System Check" successively (with BIST check tape in playback status.)

- 1) Enter the following data.

Note: Press the PAUSE button each time the data is set.

Page	Address	Data
4	41	01
4	0F	02
4	0E	01
4	40	01
4	0F	0A
4	40	00
4	40	01
4	0F	0E
4	40	00
4	40	01
4	0F	8E
4	40	00

- 2) With the HOLD switch on adjusting remote commander turned ON, eject the BIST check tape, and insert a record tape instead.
- 3) Set the REC mode.

IC401 (U1) Record System Check

- 4) Set data: 08 to page: 4, address: 11, and press the PAUSE button.
- 5) Set data: 01 to page: 4, address: 42, and press the PAUSE button.
- 6) Set data: 07 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
- 7) Set data: 00 to page: 4, address: 42, and press the PAUSE button.
- 8) Set data: 00 to page: 4, address: 11, and press the PAUSE button.
- 9) If IC401 (U1) → IC411 (D1) record system is normal, the following data are displayed on page: 4, address: 16, 17.

Page	Address	Data
4	17	C5
4	16	80

IC411 (D1) Record System Check

- 10) Set data: 0D to page: 3, address: 01, and press the PAUSE button.
- 11) Set data: FF to page: 4, address: 1C, and press the PAUSE button.
- 12) Set data: 04 to page: 4, address: 11, and press the PAUSE button.
- 13) Set data: 00 to page: 4, address: 11, and press the PAUSE button.
- 14) Set data: 03 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
- 15) If IC401 (U1) → IC411 (D1) record system is normal, the following data are displayed on page: 4, address: 14, 15.

Page	Address	Data
4	15	05
4	14	80

- 16) If IC411 (D1) → IC701 (IND1) record system is normal, the following data are displayed on page: 4, address: 16, 17.

Page	Address	Data
4	17	E6
4	16	BC

- 17) If IC805 (A1) → IC411 (D1) record system is normal, the following data are displayed on page: 4, address: 18, 19.

Page	Address	Data
4	19	76
4	18	B9

- 18) If IC411 (D1) → IC774 (DX) record system is normal, the following data are displayed on page: 4, address: 1A, 1B.

Page	Address	Data
4	1B	4E
4	1A	11

3-6. AUDIO SYSTEM ADJUSTMENTS

Unless specified otherwise, set the switches as follows.

AUDIO NODE (Menu display) Fs48k
 INPUT SELECT VIDEO
 AUDIO MONITOR CH-1/2
 REC LEVEL L, R Center

Note 1 : Set AUDIO MODE at the SET UP menu of the menu screen.

[Connection of Equipment]

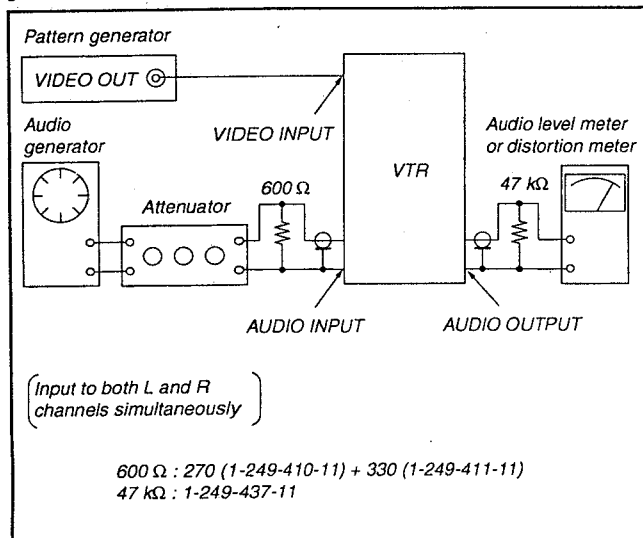


Fig. 5-3-32.

1. Playback Level/indicator Check

Mode	Playback
Signal	Audio check reference tape
Measurement Point	Audio output terminal (Left and right)
Measuring Instrument	Audio level meter and frequency counter
Specified Value	<p>32 kHz mode: The 1 kHz signal should be output.</p> <p>48 kHz mode: The 1 kHz signal level should be $+6 \pm 2$ dBv ($+8.2 \pm 2$ dBs)</p> <p>44.1 kHz mode EMP ON: The 7.35 kHz signal level is -6 ± 2 dB for the 1 kHz signal level in the 48 KHz mode</p> <p>44.1 kHz mode EMP OFF: The 7.35 kHz signal level is 0 ± 1 dB for the 1 kHz signal level in the 48 kHz mode</p> <p>NS AUDIO lamp should be lit.</p>

Note : 0 dBv=1 Vrms
 0 dBs=0.775 Vrms

Checking method:

- 1) Check that the playback signal level satisfies the specified value.

2. E-E Level Check

Mode	E-E (LINE 1 input)
Signal	<p>Audio: 1 kHz , -6 dBv (-3.8 dBs) signal, Audio input terminal (Left and right)</p> <p>Video: Color bar signal, Video input terminal</p>
Measurement Point	Audio output terminal (Left and right)
Measuring Instrument	Audio level meter
Specified Value	-6 ± 3 dBv (-3.8 ± 3 dBs)

Checking method:

- 1) Check that the 1 kHz signal level satisfies the specified value.
- 2) Check that the number in the segment of the level meter (fluorescent display tube) that is lit is between 8 and 12 for both the L and R channels.

3. Recording/Playback Check (Audio Lock Mode)

Mode	Recording/playback (LINE input)
Signal	<p>Audio: no signal</p> <p>Video: Color bar Video input terminal</p>
Measurement Point	Display data of page:5, address:00 of the adjusting remote commander
Measuring Instrument	
Specified Value	<p>① After playback pause, the changes in the data after 5 frames have been sent continuously must be in the following order. "D4"→"D6"→"D6"→"D6"→"D6"→ "D4"(NTSC) "D8"→"D8"→"D8"→"D8"→"D8"→ "D8"(PAL)</p> <p>② NS AUDIO lamp should be lit.</p>

Note 1: Check that the AUDIO MODE (menu screen) is Fs48k.

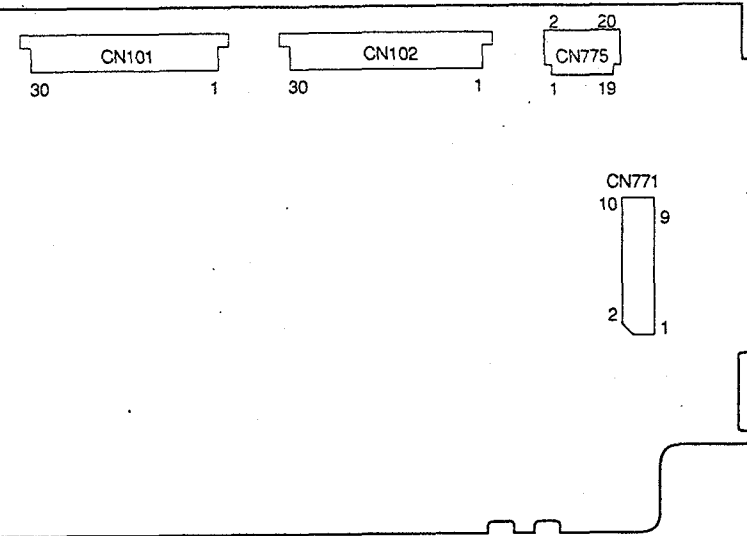
Note 2: Send the frames using front panel button.

Checking method:

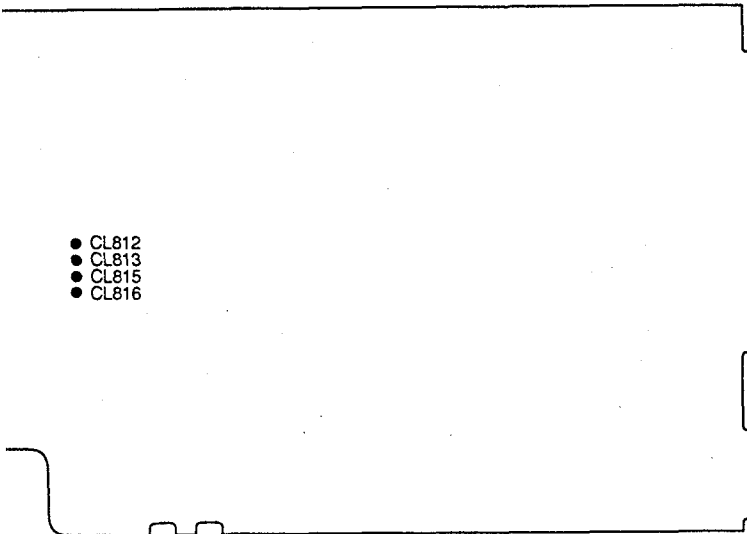
- 1) With no audio signal being input, record the color bar signal for about 1 minute.
- 2) Playback the recorded part, and set the playback pause mode.
- 3) Select page:5, address:00 using the adjusting remote commander.
- 4) Send the frames, so that the display data for page:5, address:00 is 54. (NTSC)
- 5) Send 5 frames continuously, and check that the display data of page:5, address:00 changes in the order specified.
- 6) Exit the playback pause mode, playback the recorded part, and check that the NS AUDIO lamp (front panel) is off.

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

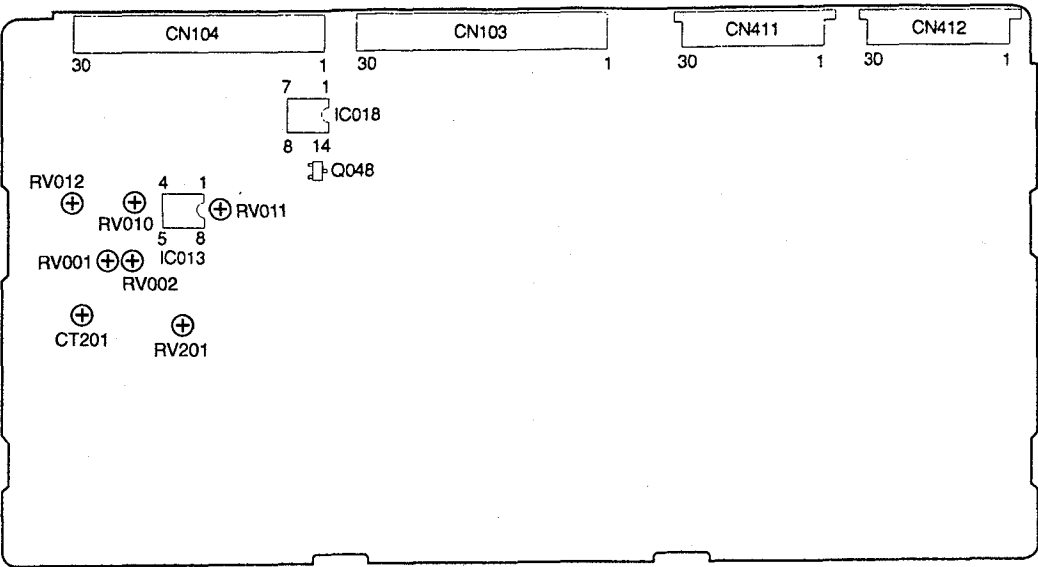
28 BOARD (SIDE A)



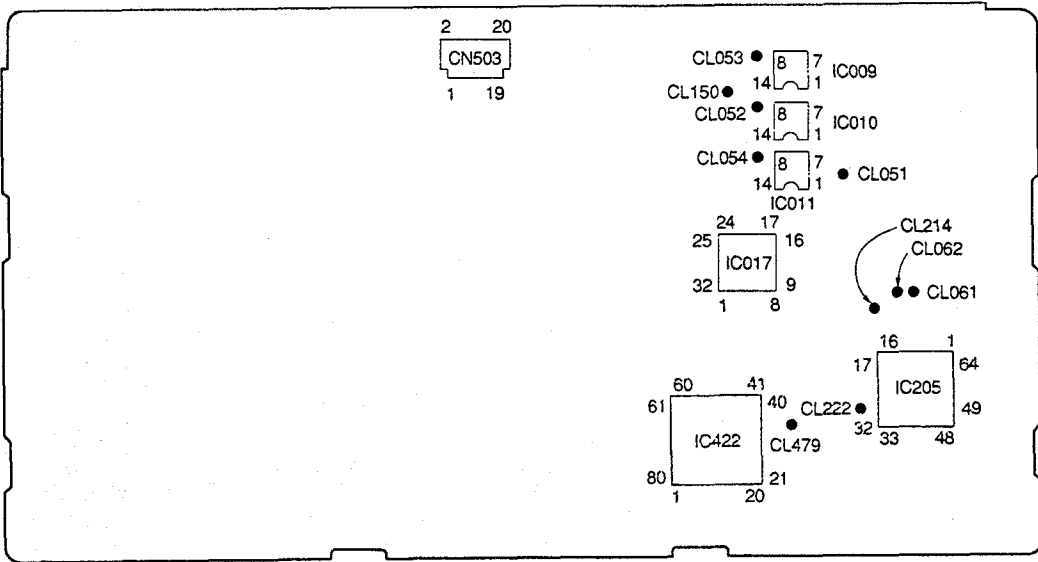
28 BOARD (SIDE B)



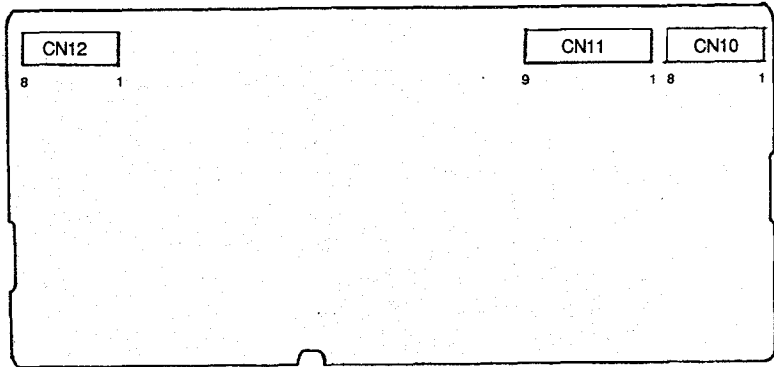
JC-19 BOARD (SIDE A)



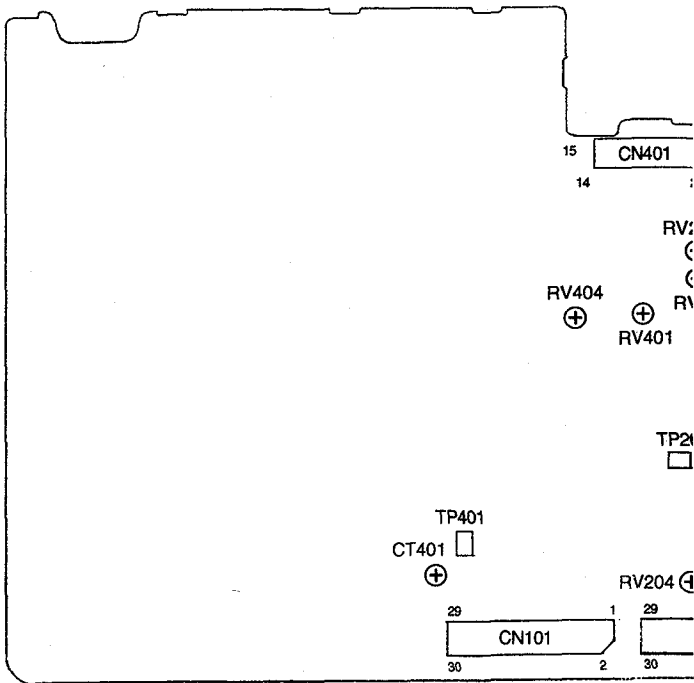
JC-19 BOARD (SIDE B)



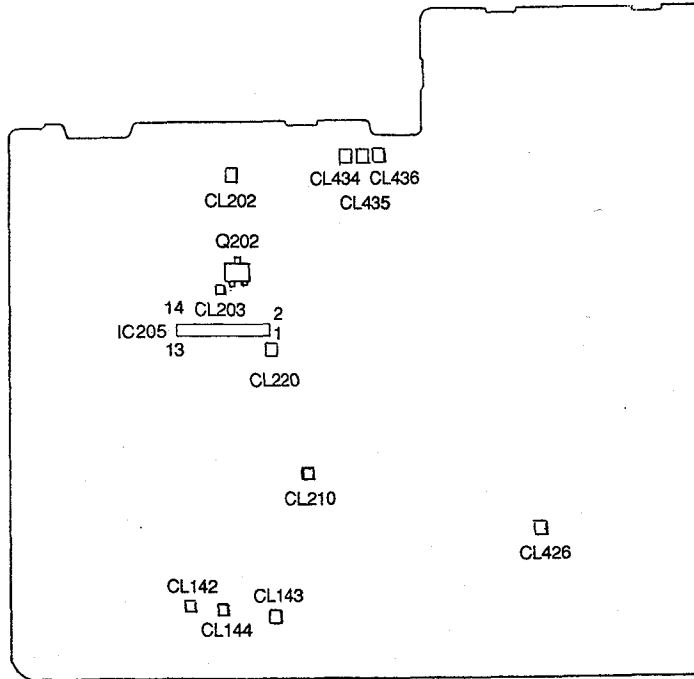
POWER BLOCK (U-2)



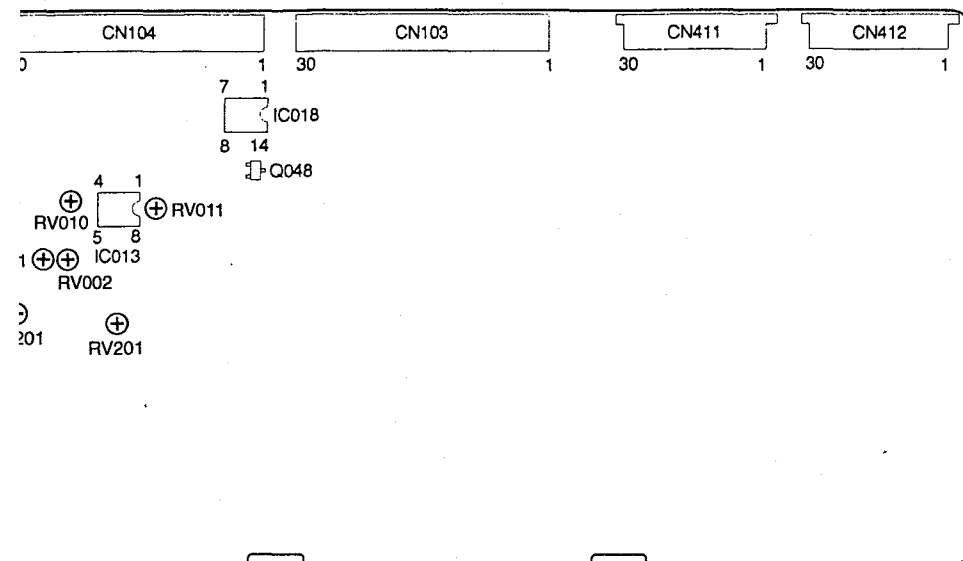
VA-102 BOARD (SIDE A)



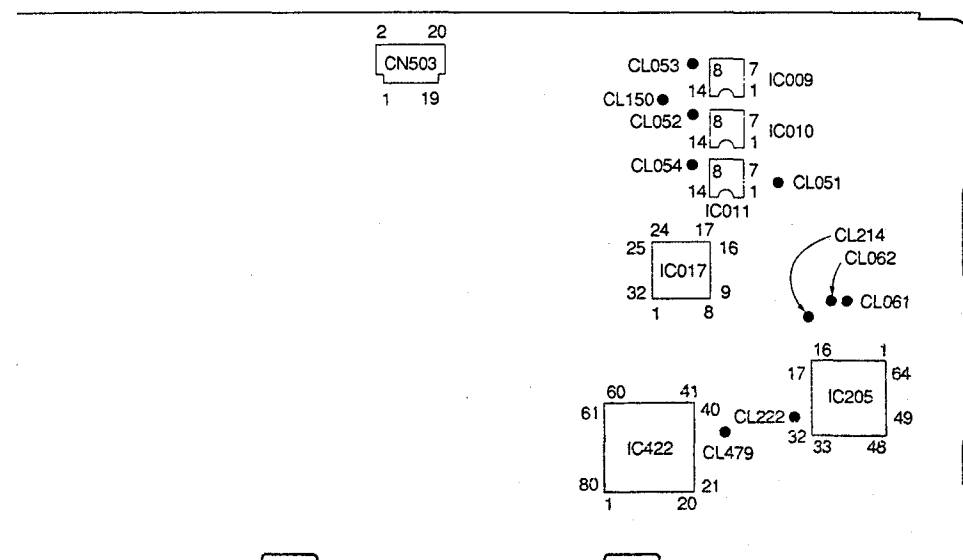
VA-102 BOARD (SIDE B)



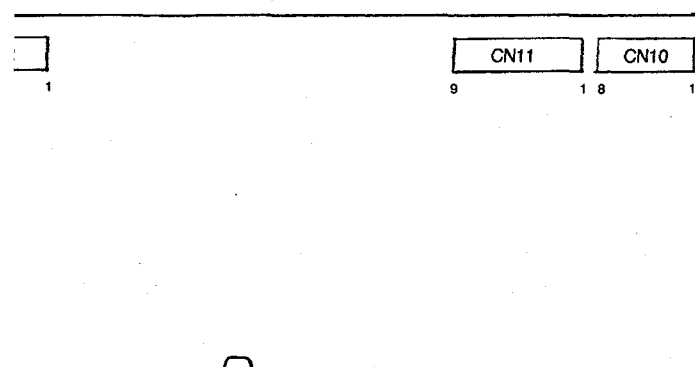
DARD(SIDE A)



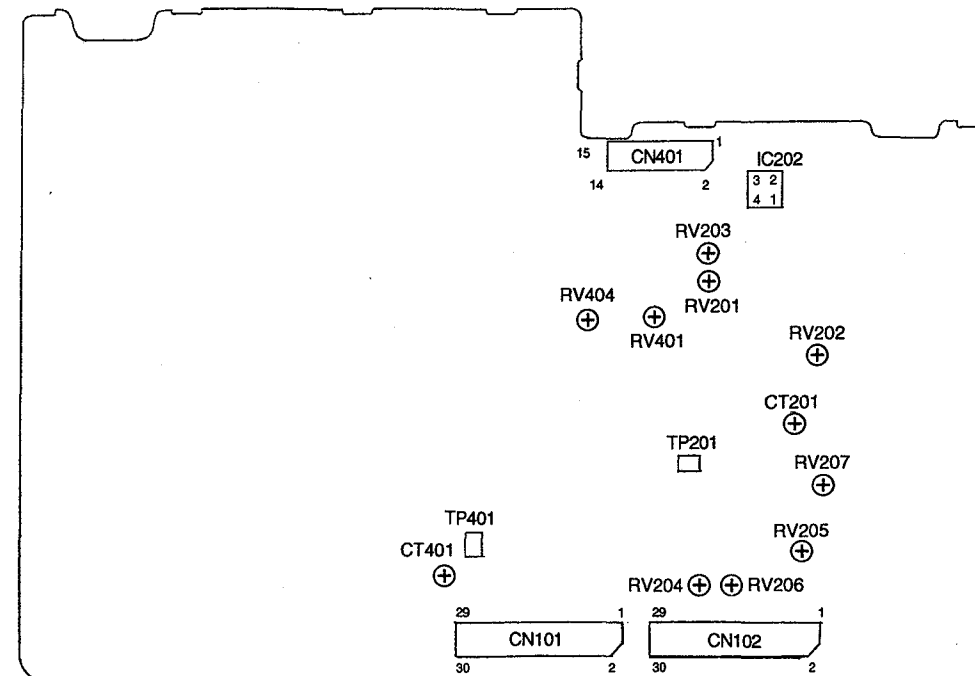
DARD(SIDE B)



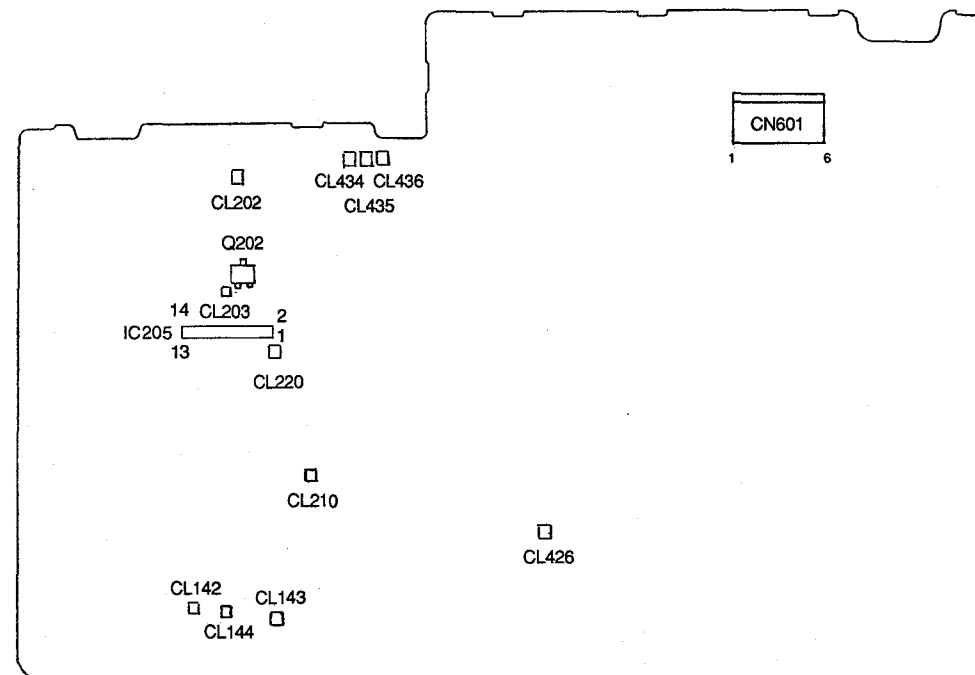
BLOCK(U-2)



VA-102 BOARD(SIDE A)



VA-102 BOARD(SIDE B)



SECTION 6 REPAIR PARTS LIST

6-1. EXPLODED VIEWS

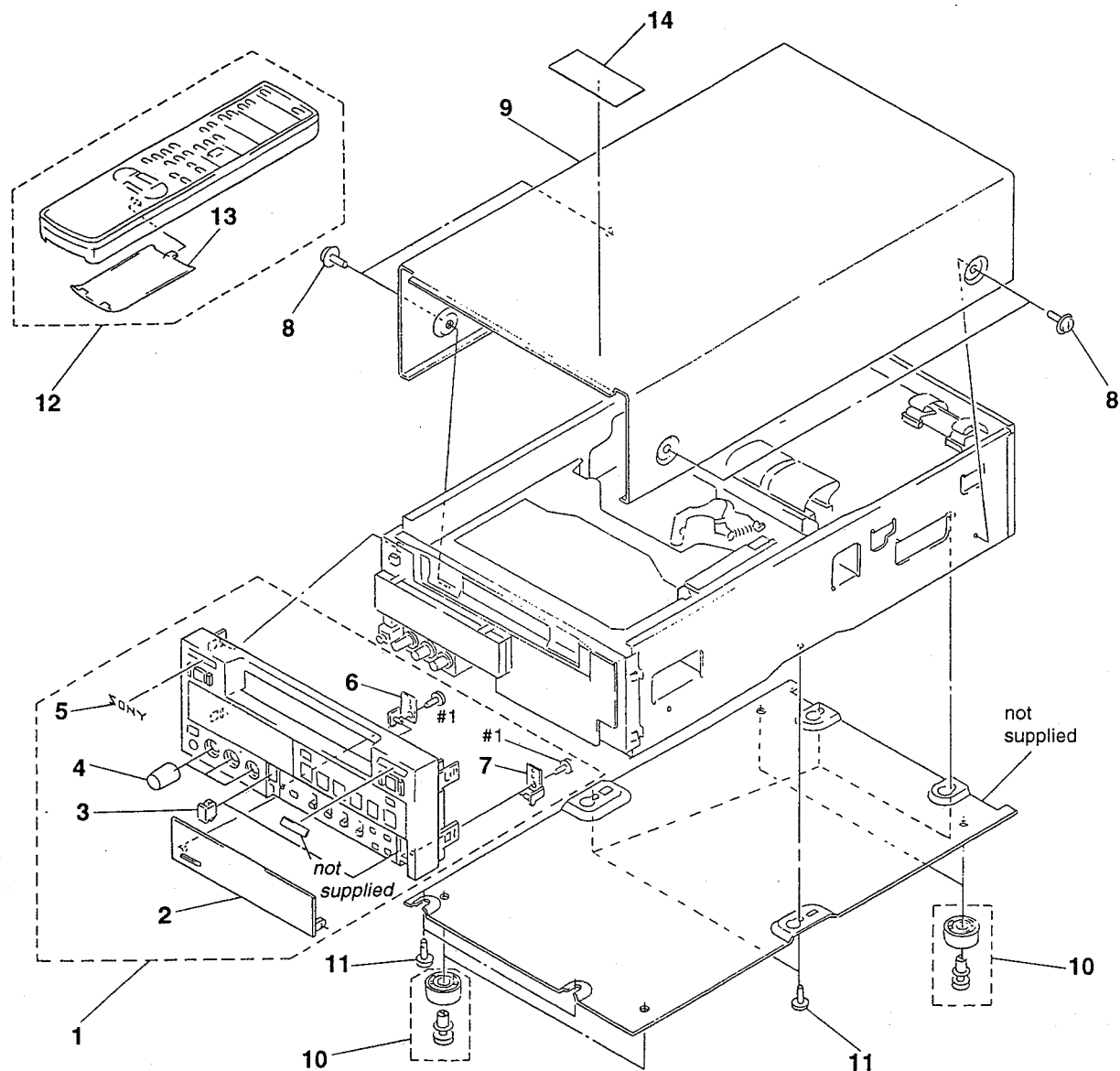
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

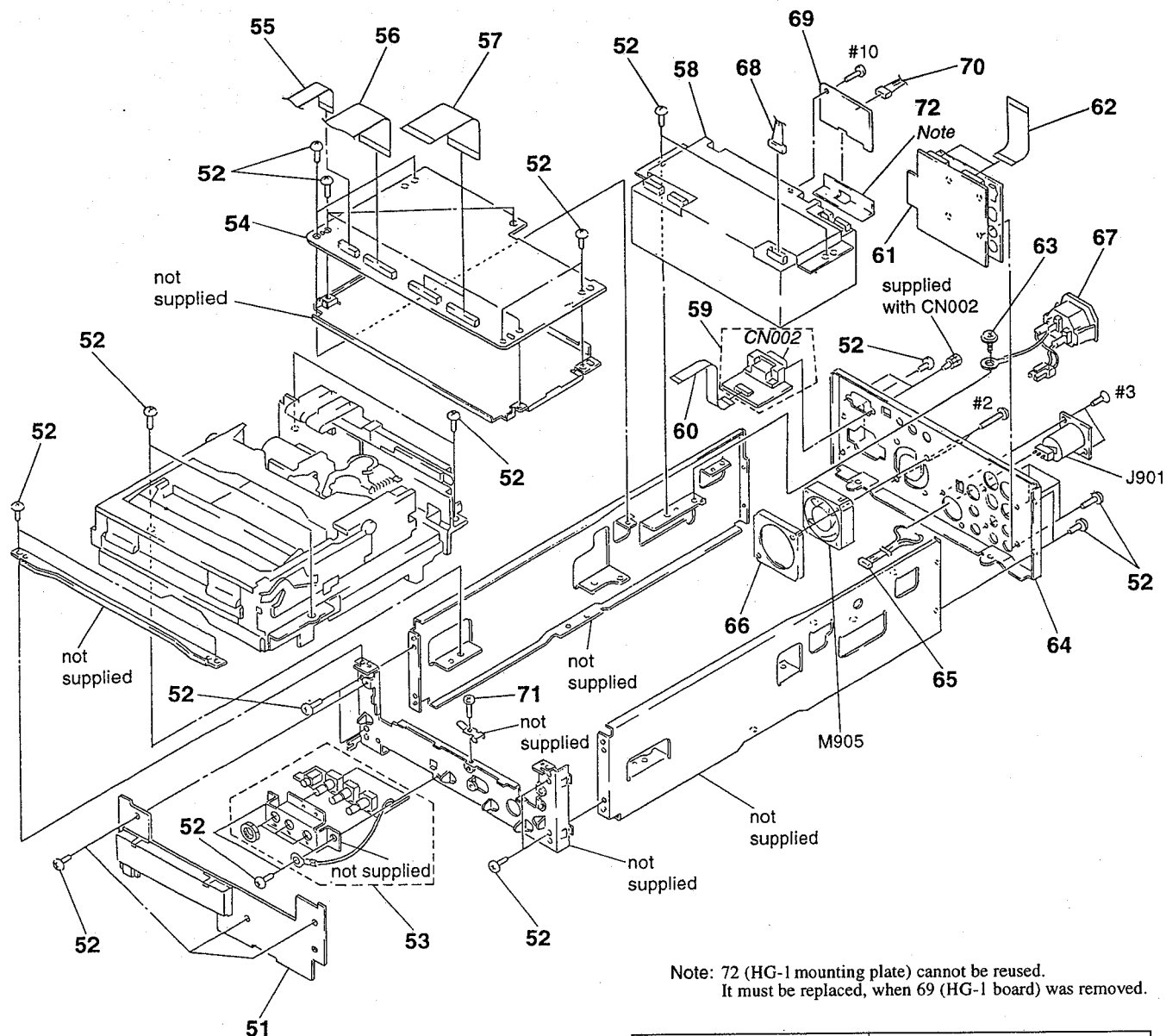
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. OVERALL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3948-053-1	PANEL ASSY, FRONT (DSR-20)		* 7	X-3948-056-1	HINGE (R) ASSY, DOOR	
1	X-3948-083-1	PANEL ASSY, FRONT (DSR-20P)		8	4-886-821-01	SCREW, M3 CASE	
2	X-3948-055-1	DOOR ASSY (DSR-20)		* 9	3-987-158-01	CASE, UPPER	
2	X-3948-084-1	DOOR ASSY (DSR-20P)		10	3-987-171-01	FOOT (FF-004)	
3	3-950-280-01	MAGNET		11	3-970-608-41	SUMITITE (B3), +BV	
4	3-956-976-11	KNOB, ROTARY		12	1-475-693-11	REMOTE COMMANDER (RMT-DS20)	
5	4-942-567-01	EMBLEM (NO.4), SONY		13	3-708-923-01	LID, BATTERY CASE (for RMT-DS20)	
* 6	X-3948-057-1	HINGE (L) ASSY, DOOR		14	3-989-633-01	LABEL, CAUTION	

6-1-2. CHASSIS ASSEMBLY

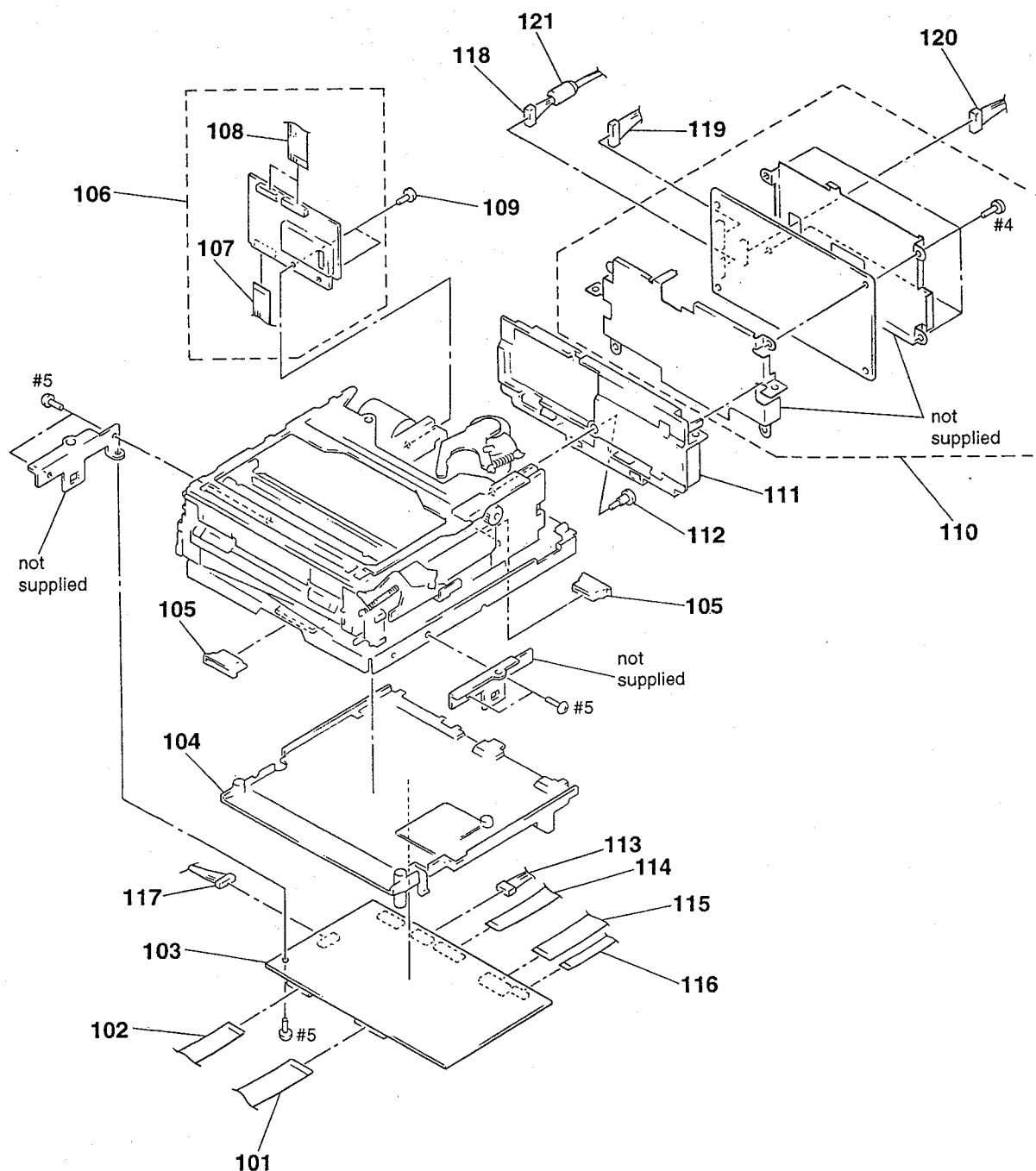


Note: 72 (HG-1 mounting plate) cannot be reused.
It must be replaced, when 69 (HG-1 board) was removed.

<p>The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	A-7073-469-A	FR-136 BOARD, COMPLETE		63	3-975-291-01	SCREW (4X6)	
52	3-970-608-41	SUMITITE (B3), +BV		* 64	3-987-157-01	PANEL, REAR (DSR-20)	
* 53	A-7073-471-A	HP-100 BOARD, COMPLETE		* 64	3-987-157-21	PANEL, REAR (DSR-20P)	
* 54	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)		65	1-958-841-11	HARNESS (DP-73)	
* 54	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)		66	3-945-562-01	BRACKET, FAN	
55	1-782-823-11	CABLE, FLAT (FVH-4)		Δ 67	1-958-585-12	HARNESS (AC-227)	
56	1-782-825-11	CABLE, FLAT (FVF-8)		68	1-958-059-11	HARNESS (VP-72)	
57	1-782-824-11	CABLE, FLAT (FVJ-7)		* 69	A-7073-576-A	HG-1 BOARD, COMPLETE	
Δ 58	1-468-290-11	POWER BLOCK (U-1/U-2)(DSR-20)		70	1-958-813-11	HARNESS (DH-50)	
Δ 58	1-468-291-11	POWER BLOCK (U-1/U-2)(DSR-20P)		71	3-964-010-01	SCREW M2	
* 59	A-7073-472-A	RS-78 BOARD, COMPLETE		* 72	3-050-330-01	BRACKET, HG-1	
60	1-782-822-11	CABLE, FLAT (FVR-9)		CN002	1-565-388-21	CONNECTOR, D-SUB 9P	
* 61	A-7073-470-A	RE-32 BOARD, COMPLETE		J901	1-564-603-41	CONNECTOR (WITH) 4P	
62	1-782-826-11	CABLE, FLAT (FVR-10)		M905	1-698-534-31	FAN, DC	

6-1-3. MD BLOCK ASSEMBLY



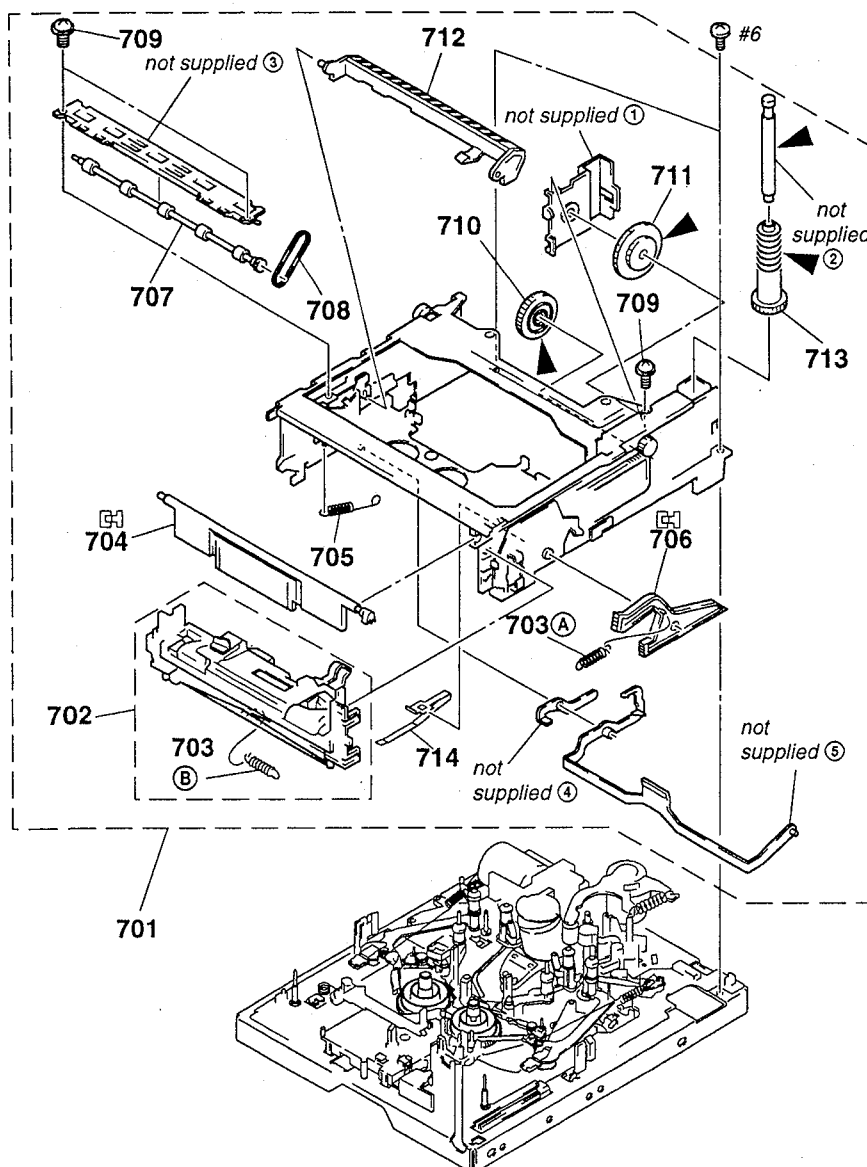
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	1-776-148-11	CABLE, FLAT (FCM-11) 15P		* 110	A-7067-130-A	JC-19 BOARD, COMPLETE (DSR-20)	
102	1-776-145-11	CABLE, FLAT (FCM-8) 16P		* 111	3-987-133-01	SUPPORT, JC	
* 103	A-7067-127-A	CM-56 BOARD, COMPLETE (DSR-20P)		112	3-741-948-01	SCREW (3), SPECIAL (+) TAPPING	
* 103	A-7067-131-A	CM-56 BOARD, COMPLETE (DSR-20)		113	1-958-288-11	HARNESS (CM-130)	
* 104	3-987-138-01	FRAME, MD		114	1-776-151-11	CABLE, FLAT (FCM-12) 14P	
105	1-764-137-11	CONNECTOR, TRANSLATION 15P		115	1-776-147-11	CABLE, FLAT (FCM-10) 15P	
* 106	A-7067-128-A	RP-228 BOARD, COMPLETE (DSR-20P)		116	1-776-146-11	CABLE, FLAT (FCM-9) 9P	
* 106	A-7067-132-A	RP-228 BOARD, COMPLETE (DSR-20)		117	1-958-057-11	HARNESS (CP-79)	
107	1-776-149-11	CABLE, FLEXIBLE FLAT 30P		118	1-958-061-11	HARNESS (VJ-103)	
108	1-783-376-11	CABLE, FLEXIBLE FLAT (FFC-245)		119	1-958-058-11	HARNESS (JP-55)	
109	3-732-817-01	SCREW (2X4.5), TAPPING		120	1-958-060-11	HARNESS (VJ-102)	
* 110	A-7067-126-A	JC-19 BOARD, COMPLETE (DSR-20P)		121	1-543-793-11	FILTER, CLAMP (FERRITE CORE)	

6-1-4. FL CASSETTE COMPARTMENT ASSEMBLY

NOTE FOR INSTALLATION

▶ : Place for grease (SG-055G : 7-651-000-09).

☞ : Take note of the position and specified direction.



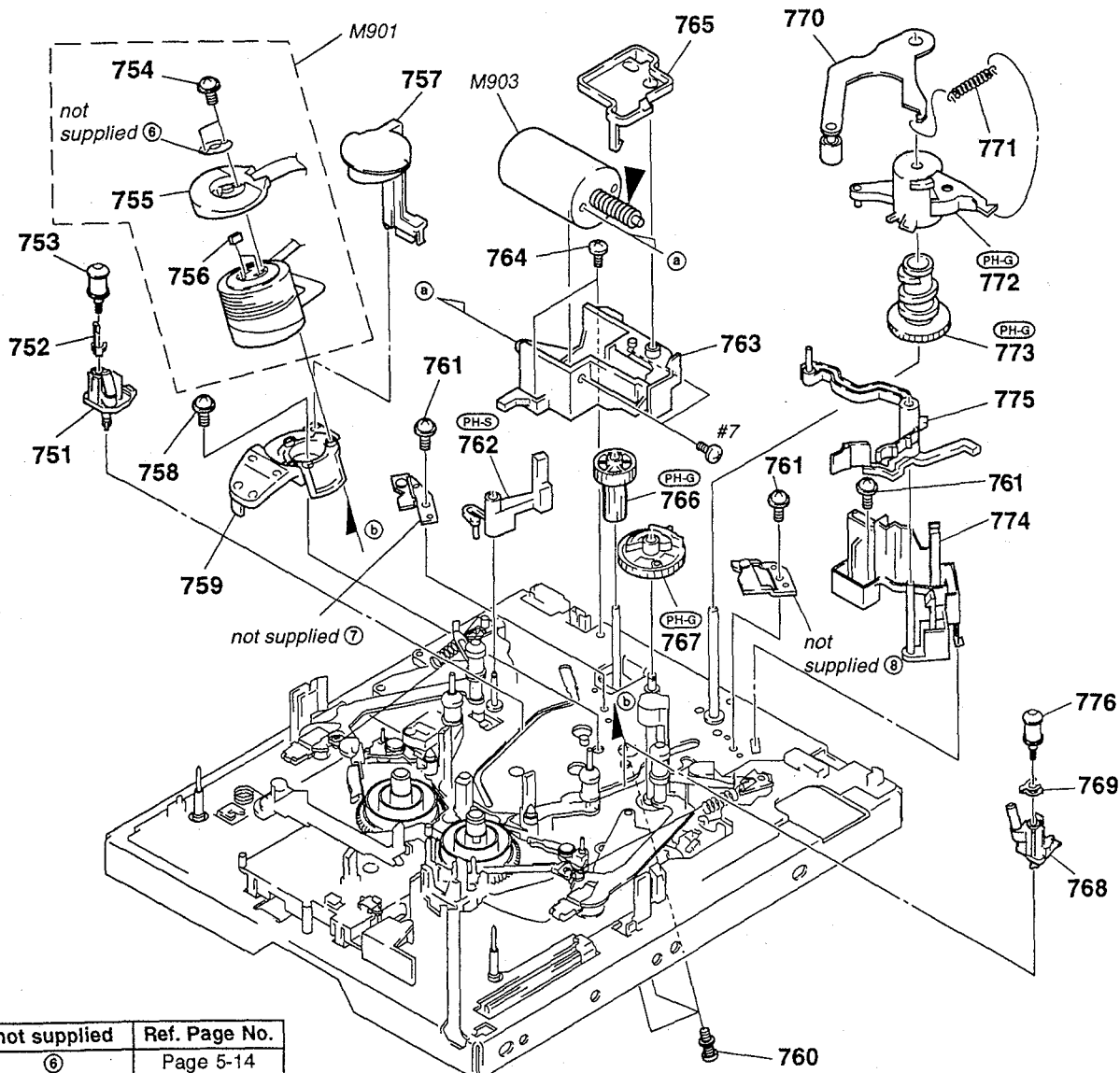
not supplied	Ref. Page No.
①	Page 5-40
②	Page 5-40
③	Page 5-38
④	Page 5-41
⑤	Page 5-41

Ref. No.	Part No.	Description	Ref. page No.	Ref. No.	Part No.	Description	Ref. page No.
701	A-7092-644-A	FL BLOCK ASSY	(5-2)	708	3-967-816-01	BELT, ROLLER	(5-38)
702	A-7092-647-A	SLOAT BLOCK ASSY, C	(5-41)	709	3-947-503-01	SCREW (M1.4X2.5)	(5-40)
703	3-967-604-01	SPRING (DB), TENSION (A: 5-40/B: 5-41)	(5-40)	710	3-967-591-01	GEAR (B)	(5-40)
704	3-967-655-01	DOOR, C	(5-41)	711	3-967-590-01	GEAR (A)	(5-39)
705	3-967-613-01	SPRING (HS), TENSION COIL	(5-41)	712	3-967-653-01	OPENER, LID	(5-40)
706	3-967-777-01	ARM, DAMPER	(5-38)	713	3-967-592-01	WORM, C	(5-41)
707	X-3945-780-1	SHAFT ASSY, ROLLER		714	3-967-636-01	SPRING, SHIFT PLATE	

6-1-5. MECHANISM CHASSIS ASSEMBLY (1) (TOP SIDE VIEW (1))

NOTE FOR INSTALLATION

PH : Phase adjustment
▶ : Place for grease (SG-055G : 7-651-000-09).



not supplied	Ref. Page No.
⑥	Page 5-14
⑦	Page 5-15
⑧	Page 5-16

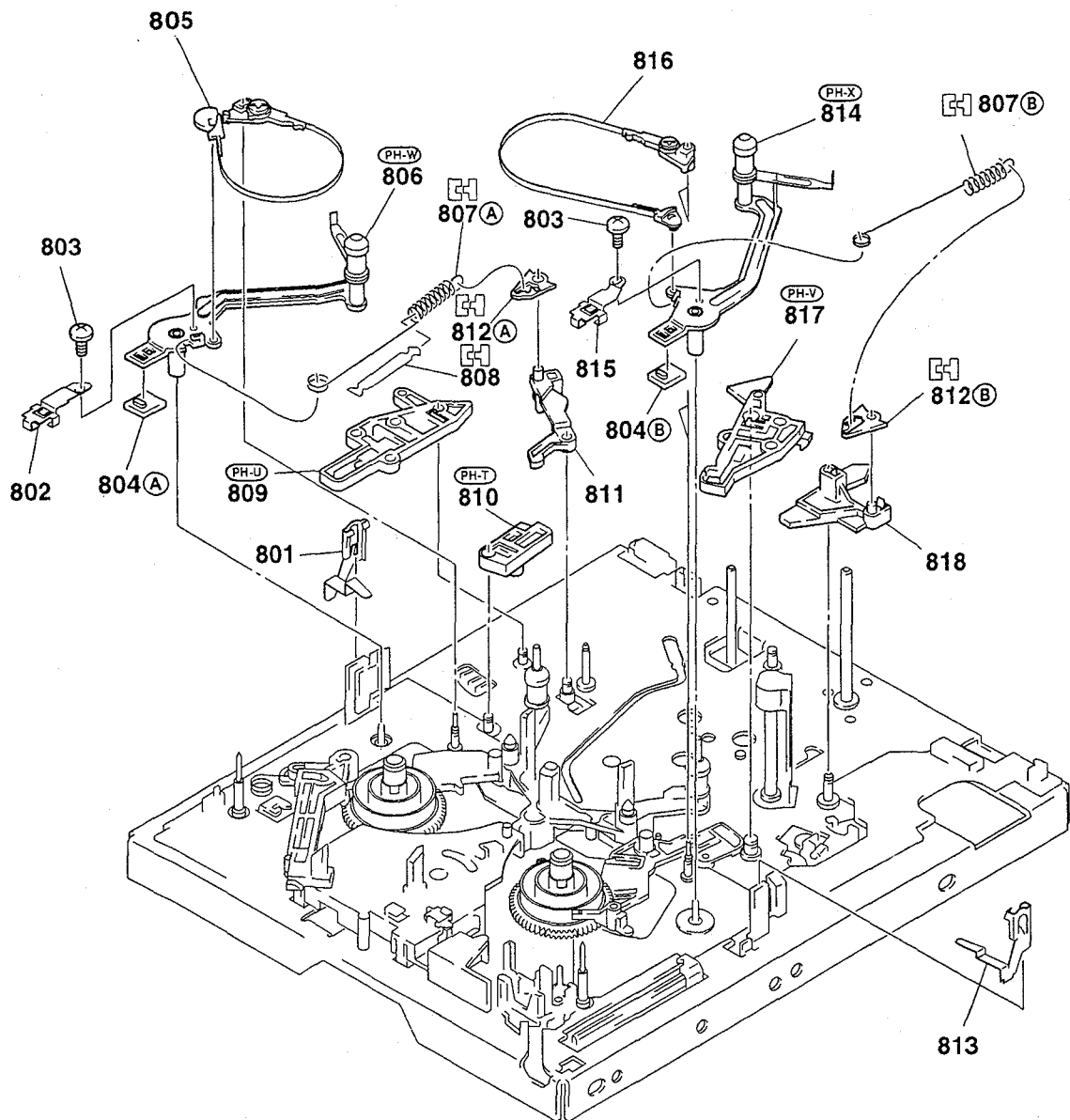
Ref. No.	Part No.	Description	Ref. page No.	Ref. No.	Part No.	Description	Ref. page No.
751	X-3945-801-1	BASE ASSY, TG3/4	(5-31)	765	3-967-751-01	COVER, LM	(5-15)
752	3-967-740-01	SPRING, TG3 LOCK	(5-26, 5-33)	766	3-967-767-01	WHEEL, LM WORM	(5-15)
753	X-3947-441-1	ROLLER ASSY, TG3	(5-26)	767	3-967-768-01	GEAR, PINCH DRIVING	(5-15)
754	3-703-816-74	SCREW (M1.4X4.5), SPECIAL HEAD		768	X-3945-803-1	BASE ASSY, TG5/6	(5-33)
755	X-3944-897-2	FPC ASSY, MOTOR	(5-14)	769	3-967-741-01	SPRING, TG6 LOCK	(5-26, 5-33)
756	1-770-363-11	ELASTIC CONNECTOR	(5-14)	770	X-3945-810-1	ARM ASSY, PINCH	(5-16)
757	3-967-785-01	STOPPER, TAPE	(5-14)	771	3-967-645-01	SPRING (PINCH), TENSION COIL	(5-16)
758	3-967-728-01	SCREW (M2 X 5)		772	3-967-676-01	LIMITER, PINCH	(5-16)
759	3-967-817-01	BASE, DRUM	(5-14)	773	3-967-769-01	GEAR, PINCH CAM	(5-16)
760	A-7040-449-A	SCREW ASSY	(5-14)	774	3-967-679-01	RETAINER, PINCH	(5-16)
761	3-954-285-01	SCREW (M1.4X0.2)		775	3-967-795-03	ARM, HC	(5-16)
762	X-3945-798-1	ARM ASSY, TC	(5-15)	776	X-3945-802-1	ROLLER ASSY, TG6	(5-26)
763	3-967-675-01	HOLDER, LM	(5-15)	M901	A-7044-015-A	DRUM ASSY (DEH-08B-R)	(5-14)
764	3-732-817-01	SCREW (2X4.5), TAPPING		M903	X-3945-784-1	MOTOR ASSY, LM (LOADING)	(5-15)

6-1-6. MECHANISM CHASSIS ASSEMBLY (2)
(TOP SIDE VIEW (2))

NOTE FOR INSTALLATION

PH- : Phase adjustment

CH : Take note of the position and specified direction.

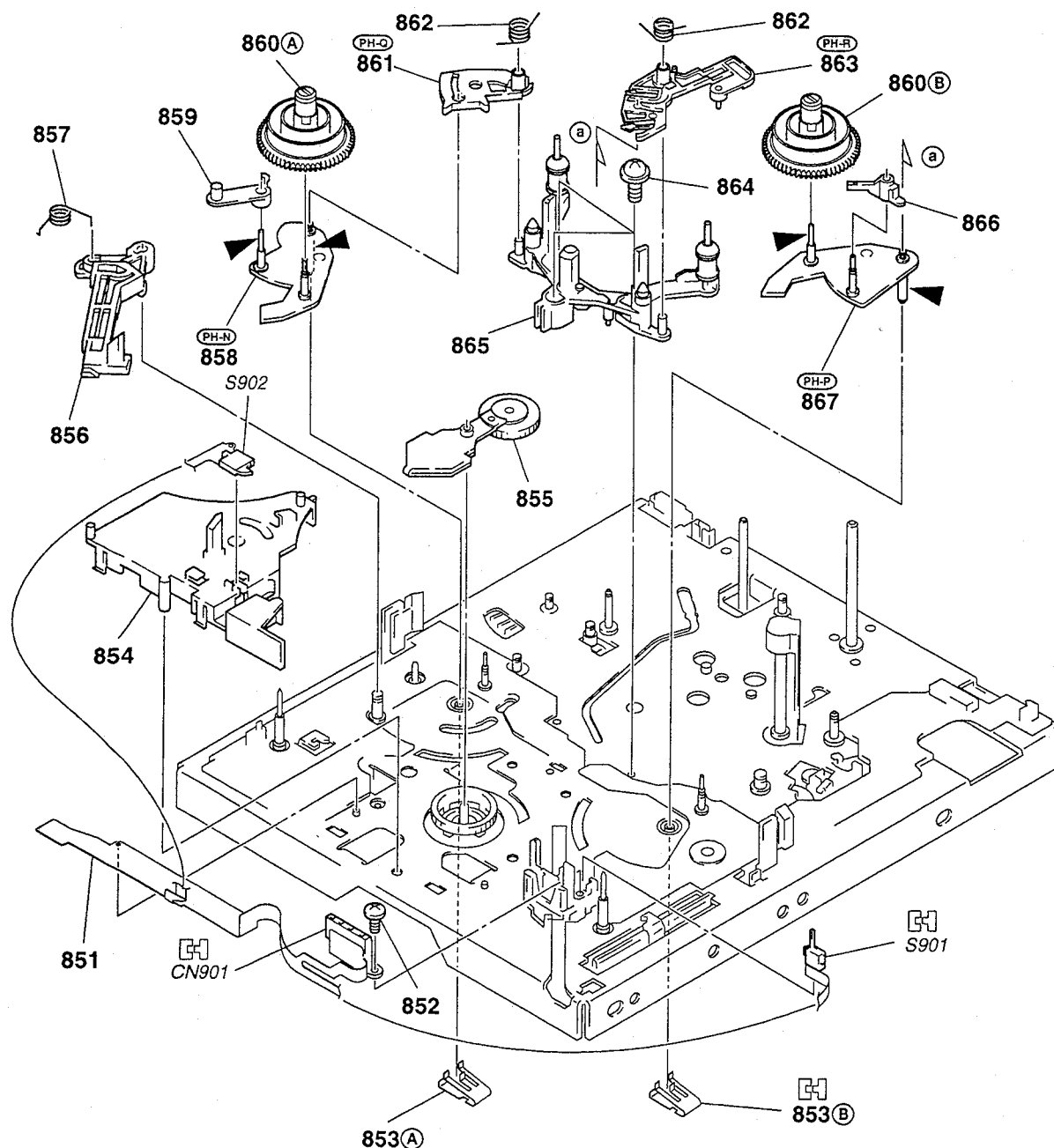


Ref. No.	Part No.	Description	Ref. page No.	Ref. No.	Part No.	Description	Ref. page No.
801	3-967-809-01	RETAINER, TG2	(5-19)	810	3-967-764-01	ARM, TG2 SELECTION	(5-18)
802	3-967-715-01	SPRING, TG2 PLATE	(5-19)	811	3-967-807-01	HOOK, TG2 SPRING	(5-18)
803	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD		812	3-967-724-01	ADJUSTOR, SPRING	(5-18, (A): 5-9/(B): 5-10)
804	3-967-714-01	MAGNET, ET	(A): 5-19/(B): 5-520	813	3-967-810-01	RETAINER, TG7	(5-20)
805	X-3945-792-1	BAND ASSY, S TENSION REGULATOR	(5-19)	814	X-3945-806-1	ARM ASSY, TG7	(5-20)
806	X-3945-805-1	ARM ASSY, TG2	(5-19)	815	3-967-694-01	SPRING, TG7 PLATE	(5-20)
807	3-967-726-01	SPRING (TG2), TENSION COIL	(5-18, (A): 5-9/(B): 5-10)	816	X-3945-793-1	BAND ASSY, T TENSION REGULATOR	(5-20)
808	3-967-685-01	SHEET, DAMPER	(5-18)	817	X-3945-783-1	ARM ASSY, TG7 LOAD	(5-20)
809	X-3945-782-1	ARM ASSY, TG2 LOAD	(5-19)	818	3-967-808-01	HOOK, TG7 SPRING	(5-18)

6-1-7. MECHANISM CHASSIS ASSEMBLY (3) (TOP SIDE VIEW (3))

NOTE FOR INSTALLATION

- (PH-) : Phase adjustment
- ▶ : Place for grease (SG-055G : 7-651-000-09).
- [H] : Take note of the position and specified direction.



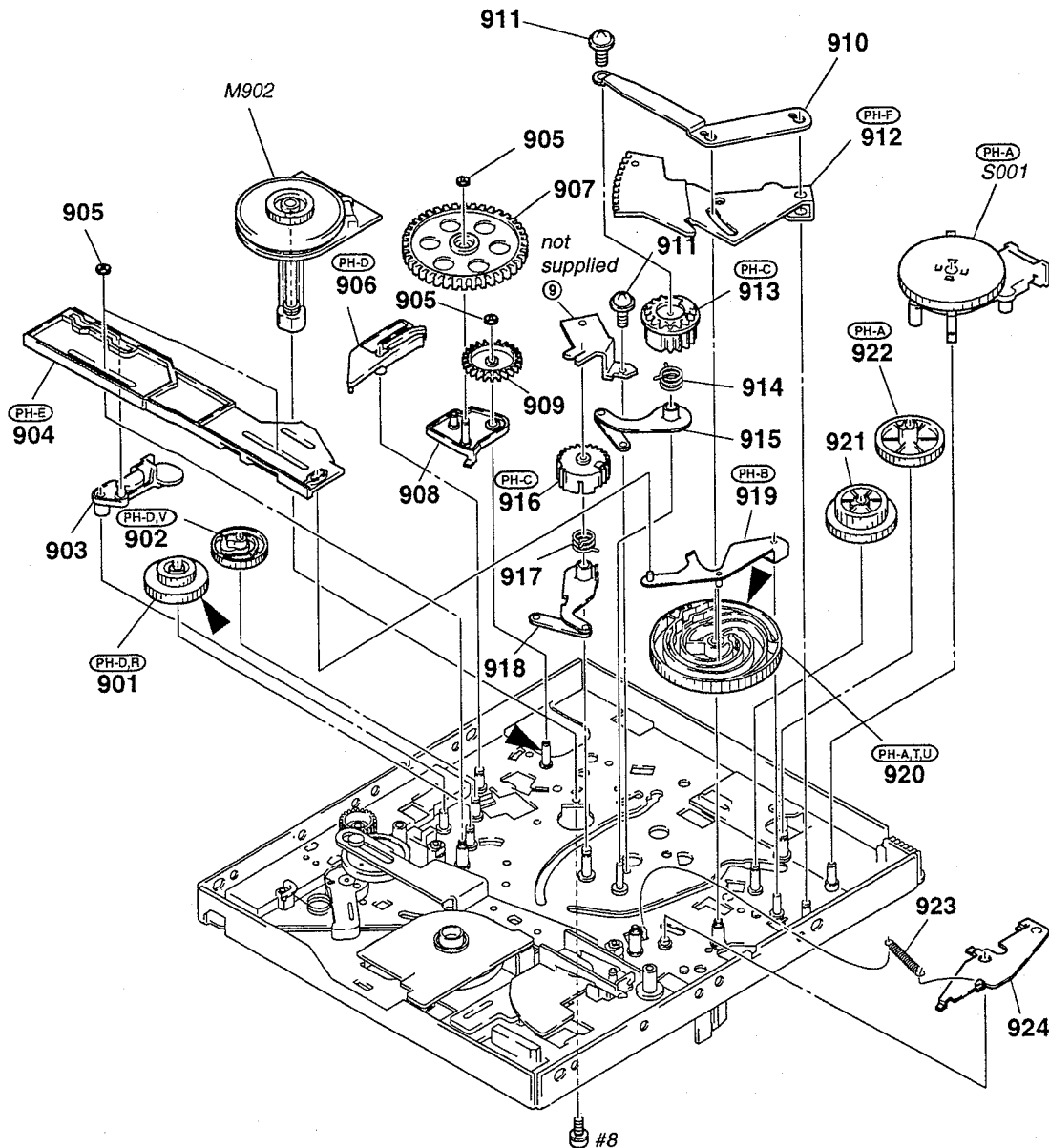
Ref. No.	Part No.	Description	Ref. page No.	Ref. No.	Part No.	Description	Ref. page No.
851	1-658-990-11	FP-406 FLEXIBLE BOARD		861	3-967-776-01	BRAKE, S	(5-25)
852	3-318-201-11	SCREW (B) (1.4X3), TAPPING		862	3-967-673-01	SPRING, S BRAKE	(5-25)
853	3-967-684-01	SPRING, PLATE	(A: 5-23/B: 5-24)	863	3-967-775-01	RATCHET, T	(5-25)
854	3-967-692-01	GUARD, GOOSENECK	(5-17)	864	3-947-503-01	SCREW (M1.4X2.5)	
855	X-3945-807-1	ARM ASSY, GOOSENECK	(5-17)	865	X-3945-804-1	BASE ASSY, TG18	(5-25)
856	3-967-784-01	ARM, RL	(5-17)	866	3-967-725-01	HOLDER, T REEL	(5-22)
857	3-967-683-01	SPRING, RL PRESS	(5-17)	867	X-3945-815-1	PLATE ASSY, T REEL	(5-24)
858	X-3945-814-1	PLATE ASSY, S REEL	(5-23)	CN901	1-770-312-21	CONNECTOR 4P	(5-35)
859	3-967-680-01	LINK, RL	(5-17)	S901	1-762-551-11	SWITCH, PUSH (REC PROOF)	(5-35)
860	A-7040-441-A	TABLE BLOCK ASSY, REEL (A: 5-21/B: 5-22)		S902	1-572-288-11	SWITCH, PUSH (C IN SW)	(5-17)

6-1-8. MECHANISM CHASSIS ASSEMBLY (4) (BOTTOM SIDE VIEW (1))

NOTE FOR INSTALLATION

PH : Phase adjustment

► : Place for grease (SG-055G : 7-651-000-09).

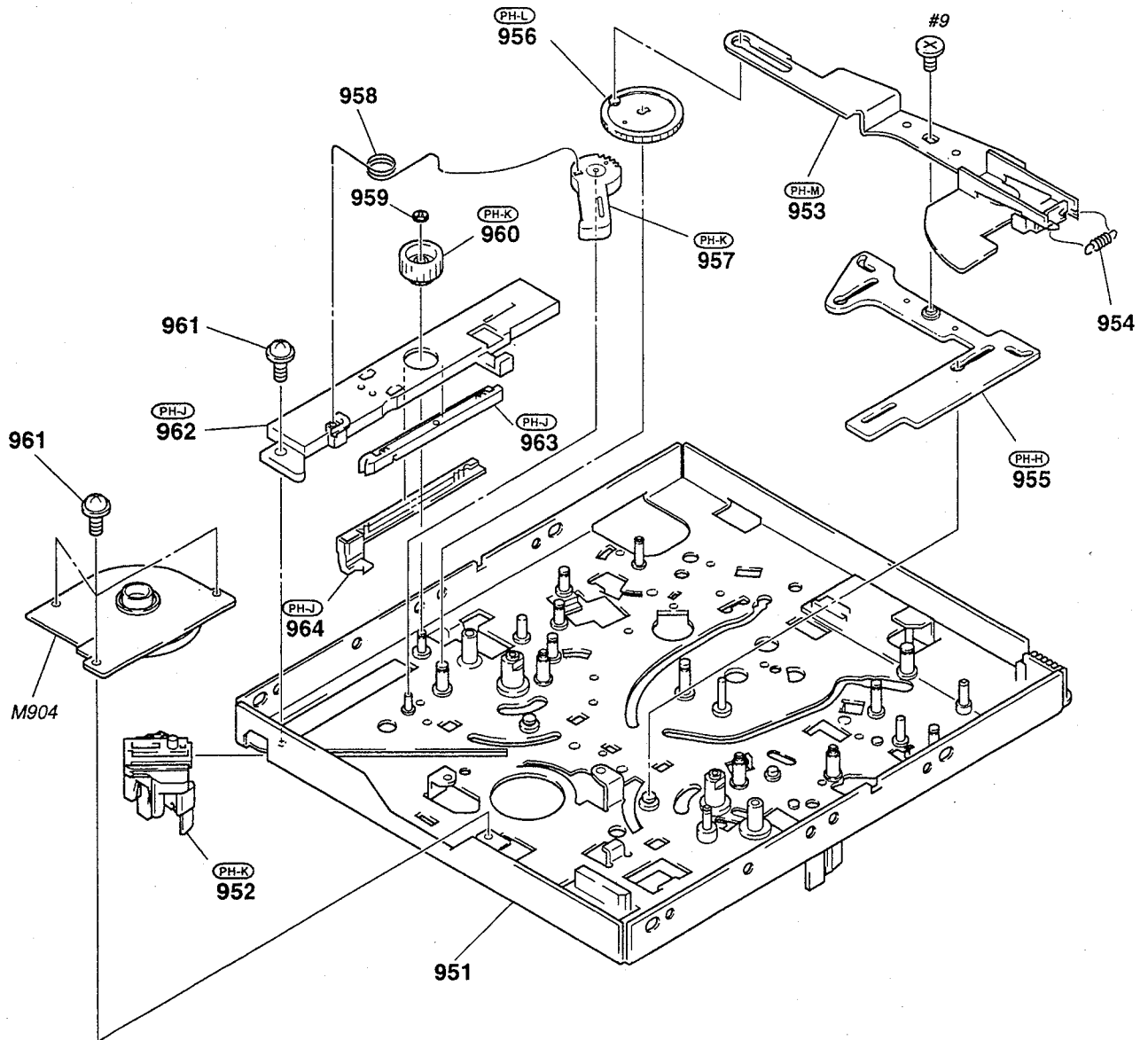


not supplied	Ref. Page No.
⑨	Page 5-26

Ref. No.	Part No.	Description	Ref. page No.	Ref. No.	Part No.	Description	Ref. page No.
901	3-967-678-01	GEAR, T CAM	(5-28)	914	3-967-746-01	SPRING, TG3/4 LIMITER	(5-31)
902	3-967-756-01	GEAR, TG7 CAM	(5-28)	915	X-3945-794-1	ARM ASSY, TG3/4	(5-31)
903	3-967-763-01	ARM, TG7 SELECTION	(5-28)	916	3-967-792-01	GEAR, TG5/6	(5-33)
904	3-967-677-01	SLIDER, M	(5-28)	917	3-967-748-01	SPRING, TG5/6 LIMITER	(5-33)
905	3-669-465-01	WASHER (1.5), STOPPER	(5-28)	918	X-3945-795-1	ARM ASSY, TG5/6	(5-33)
906	3-967-829-01	ARM, FL SELECTION	(5-28)	919	3-967-753-01	ARM, M SLIDER	(5-28)
907	3-967-828-01	GEAR, FL JOINT	(5-26)	920	3-967-819-01	CAM, MAIN	(5-29)
908	X-3945-813-1	ARM ASSY, FL JOINT	(5-27)	921	3-967-765-01	GEAR, TC	(5-27)
909	3-967-830-01	GEAR, FL RELAY	(5-27)	922	3-967-766-01	GEAR, RELAY	(5-27)
910	3-967-755-01	RETAINER, GL ARM	(5-28)	923	3-967-633-01	SPRING (TG2SL), TENSION COIL	(5-29)
911	3-947-503-01	SCREW (M1.4X2.5)	(5-28)	924	X-3945-781-1	ARM ASSY, TG2 SL	(5-29)
912	3-967-754-01	ARM, GL	(5-31)	M902	8-835-545-01	MOTOR, DC SCD11A/J-N (CAPSTAN)	(5-26)
913	3-967-790-01	GEAR, TG3/4		S001	1-762-550-11	SWITCH, ROTARY (MODE)	(5-27)

**6-1-9. MECHANISM CHASSIS ASSEMBLY (5)
(BOTTOM SIDE VIEW (2))**

NOTE FOR INSTALLATION
 (PH-) : Phase adjustment



Ref. No.	Part No.	Description	Ref. page No.	Ref. No.	Part No.	Description	Ref. page No.
* 951	A-7040-431-A	CHASSIS BLOCK ASSY, MECHANICAL		959	3-669-465-01	WASHER (1.5), STOPPER	
952	3-967-690-01	HOLDER, MIC	(5-35)	960	3-967-681-01	GEAR, RACK JOINT	(5-35)
953	X-3945-789-1	ARM ASSY, RS	(5-34)	961	3-947-503-01	SCREW (M1.4X2.5)	
954	3-967-667-01	TENSION COIL SPRING	(5-34)	962	3-967-689-01	HOLDER, RACK	(5-35)
955	X-3945-788-1	LINK ASSY, PLATE	(5-37)	963	3-967-771-01	RACK (SC)	(5-35)
956	X-3945-787-1	GEAR ASSY, RS	(5-34)	964	3-967-770-01	RACK (LC)	(5-35)
957	3-967-783-01	LEVER, MIC	(5-34)	M904	8-835-537-01	MOTOR, DC SRD11A/J-N (REEL)	(5-34)
958	3-967-682-01	SPRING, MIC PRESS	(5-34)				

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6-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

SEMICONDUCTORS

In each case, u: μ , for example:

uA... : μ A... uPA... : μ PA...
uPB... : μ PB... uPC... : μ PC...
uPD... : μ PD...

CAPACITORS

uF: μ F

COILS

uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-7067-131-A	CM-56 BOARD, COMPLETE (DSR-20)		C053	1-126-397-11	ELECT 33uF 20%	25V
*	A-7067-127-A	CM-56 BOARD, COMPLETE (DSR-20P)		C054	1-127-530-11	ELECT 22uF 20%	20V
		*****		C055	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V
		(Ref No. 4,000 Series)		C056	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
		< CAPACITOR >		C058	1-127-530-11	ELECT 22uF 20%	20V
C001	1-163-121-00	CERAMIC CHIP 150PF 5%	50V	C063	1-164-336-11	CERAMIC CHIP 0.33uF	25V
C004	1-163-121-00	CERAMIC CHIP 150PF 5%	50V	C066	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C005	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C067	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C006	1-124-779-00	ELECT CHIP 10uF 20%	16V	C068	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C007	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C073	1-163-019-00	CERAMIC CHIP 0.0068uF 10%	50V
C009	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	C075	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C011	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V	C076	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C017	1-164-161-11	CERAMIC CHIP 0.0022uF 10%	100V	C078	1-124-779-00	ELECT CHIP 10uF 20%	16V
C018	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C079	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C019	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C080	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C020	1-124-779-00	ELECT CHIP 10uF 20%	16V	C081	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C021	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C082	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C022	1-124-779-00	ELECT CHIP 10uF 20%	16V	C083	1-127-530-11	ELECT 22uF 20%	20V
C024	1-163-227-11	CERAMIC CHIP 10PF 0.5PF	50V	C086	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C025	1-124-779-00	ELECT CHIP 10uF 20%	16V	C087	1-127-530-11	ELECT 22uF 20%	20V
C026	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C088	1-126-193-11	ELECT 1uF 20%	50V
C027	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C090	1-107-823-11	CERAMIC CHIP 0.47uF 10%	16V
C028	1-163-227-11	CERAMIC CHIP 10PF 0.5PF	50V	C091	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C029	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C092	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C030	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C093	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C031	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C094	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C032	1-126-193-11	ELECT 1uF 20%	50V	C095	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C034	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C096	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C035	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C099	1-163-019-00	CERAMIC CHIP 0.0068uF 10%	50V
C036	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C101	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C038	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C102	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C039	1-124-778-00	ELECT CHIP 22uF 20%	6.3V	C103	1-126-204-11	ELECT CHIP 47uF 20%	16V
C040	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C104	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C041	1-163-035-00	CERAMIC CHIP 0.047uF	50V	C105	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C042	1-163-257-11	CERAMIC CHIP 180PF 5%	50V	C106	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C046	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C107	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C047	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C108	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C048	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C111	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C049	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C112	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C051	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C113	1-163-020-00	CERAMIC CHIP 0.0082uF 10%	50V
C052	1-126-193-11	ELECT 1uF 20%	50V	C115	1-163-020-00	CERAMIC CHIP 0.0082uF 10%	50V
				C117	1-163-020-00	CERAMIC CHIP 0.0082uF 10%	50V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C118	1-163-237-11	CERAMIC CHIP 27PF 5%	50V	IC009	8-759-182-89	IC BA6219BFP-Y-E2	
C119	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	IC011	8-759-148-05	IC CXA8010M-E2	
C120	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC012	8-759-945-17	IC MB3775PF-G-BND-ER	
C121	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC014	8-759-510-73	IC BA10393F-E2	
C122	1-163-019-00	CERAMIC CHIP 0.0068uF 10%	50V	IC016	8-759-510-71	IC BA10358F-E2	
C123	1-124-779-00	ELECT CHIP 10uF 20%	16V	IC017	8-759-011-65	IC TC74HC4053AF (EL)	
C126	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC018	8-759-085-67	IC uPC339G2-E2	
C128	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC019	8-759-510-71	IC BA10358F-E2	
C129	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC021	8-759-335-42	IC CXA1793N-E2	
C133	1-163-031-11	CERAMIC CHIP 0.01uF	50V	IC022	8-759-339-61	IC LB1897D	
C504	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC501	8-759-098-24	IC PQ30RV11	
C505	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC503	8-759-339-61	IC LB1897D	
C506	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	< COIL >			
C508	1-126-205-11	ELECT CHIP 47uF 20%	6.3V	L003	1-412-282-41	INDUCTOR 470uH	
C509	1-107-823-11	CERAMIC CHIP 0.47uF 10%	16V	L004	1-414-398-11	INDUCTOR 10uH	
C510	1-163-031-11	CERAMIC CHIP 0.01uF	50V	L005	1-414-398-11	INDUCTOR 10uH	
C511	1-126-205-11	ELECT CHIP 47uF 20%	6.3V	L006	1-414-398-11	INDUCTOR 10uH	
C512	1-126-193-11	ELECT 1uF 20%	50V	L007	1-414-402-11	INDUCTOR 47uH	
C513	1-164-161-11	CERAMIC CHIP 0.0022uF 10%	100V	L008	1-424-522-21	INDUCTOR 0uH	
C514	1-163-031-11	CERAMIC CHIP 0.01uF	50V	L010	1-424-522-21	INDUCTOR 0uH	
C515	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	L011	1-409-535-41	INDUCTOR 0uH	
< CONNECTOR >				L013	1-424-524-21	INDUCTOR 0uH	
CN001	1-770-699-11	CONNECTOR, FFC/FPC 16P		L014	1-414-402-11	INDUCTOR 47uH	
CN002	1-691-551-11	PIN, CONNECTOR (SMD) 8P		L501	1-414-402-11	INDUCTOR 47uH	
CN003	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P		L502	1-414-402-11	INDUCTOR 47uH	
* CN004	1-564-033-11	PIN, CONNECTOR 8P		< TRANSISTOR >			
CN005	1-770-692-11	CONNECTOR, FFC/FPC 9P		Q001	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
* CN006	1-691-074-11	HOUSING, CONNECTOR 15P		Q002	8-729-421-19	TRANSISTOR UN2213-TX	
* CN007	1-691-074-11	HOUSING, CONNECTOR 15P		Q003	8-729-010-25	TRANSISTOR MSD601-RT1	
CN008	1-770-697-11	CONNECTOR, FFC/FPC 14P		Q004	8-729-421-22	TRANSISTOR UN2211-TX	
< DIODE >				Q008	8-729-010-25	TRANSISTOR MSD601-RT1	
D001	8-719-026-23	DIODE MA786-TX		Q009	8-729-010-25	TRANSISTOR MSD601-RT1	
D002	8-719-106-53	DIODE RD10M-T1B		Q012	8-729-208-96	TRANSISTOR 2SA1242-Y (TE16L)	
D004	8-719-938-78	DIODE SB10-05PCP-TD		Q014	8-729-421-19	TRANSISTOR UN2213-TX	
D011	8-719-026-23	DIODE MA786-TX		Q500	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
D012	8-719-026-23	DIODE MA786-TX		Q501	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
D501	8-719-938-78	DIODE SB10-05PCP-TD		Q502	8-729-208-96	TRANSISTOR 2SA1242-Y (TE16L)	
D502	8-719-108-24	DIODE MA151A-TX		Q503	8-729-421-19	TRANSISTOR UN2213-TX	
< FUSE >				Q504	8-729-421-19	TRANSISTOR UN2213-TX	
△F001	1-532-777-21	FUSE, MICRO (SECONDARY) (1.25A/125V)		< RESISTOR >			
< FILTER >				R001	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
FL001	1-233-351-21	FILTER, BAND PASS		R002	1-216-065-00	METAL CHIP 4.7K 5%	1/10W
FL002	1-233-350-21	FILTER, BAND PASS		R003	1-216-015-00	METAL CHIP 39 5%	1/10W
< IC >				R004	1-216-295-91	SHORT 0	
IC001	8-759-062-66	IC TC7S66F (TE85R)		R005	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
IC002	8-759-235-19	IC TC74HC08AF (EL)		R006	1-216-089-91	RES, CHIP 47K 5%	1/10W
IC003	8-752-893-77	IC CXP912032-056R-T6		R009	1-216-049-91	RES, CHIP 1K 5%	1/10W
IC005	8-759-327-00	IC CXA8044Q-T4		R010	1-216-089-91	RES, CHIP 47K 5%	1/10W
IC006	8-759-085-67	IC uPC339G2-E2		R011	1-216-089-91	RES, CHIP 47K 5%	1/10W
IC008	8-759-186-44	IC TC74VHC125F (EL)		R012	1-216-089-91	RES, CHIP 47K 5%	1/10W
				R016	1-216-089-91	RES, CHIP 47K 5%	1/10W
				R017	1-216-295-91	SHORT 0	
				R018	1-216-089-91	RES, CHIP 47K 5%	1/10W

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R019	1-216-295-91	SHORT	0			R107	1-216-089-91	RES, CHIP	47K	5%	1/10W
R020	1-216-093-00	METAL CHIP	68K	5%	1/10W	R108	1-216-295-91	SHORT	0		
						R109	1-216-081-00	METAL CHIP	22K	5%	1/10W
R021	1-216-089-91	RES, CHIP	47K	5%	1/10W						
R026	1-216-049-91	RES, CHIP	1K	5%	1/10W	R110	1-216-073-00	METAL CHIP	10K	5%	1/10W
R027	1-216-089-91	RES, CHIP	47K	5%	1/10W	R111	1-216-049-91	RES, CHIP	1K	5%	1/10W
R028	1-216-049-91	RES, CHIP	1K	5%	1/10W	R112	1-216-081-00	METAL CHIP	22K	5%	1/10W
R029	1-216-049-91	RES, CHIP	1K	5%	1/10W	R113	1-216-049-91	RES, CHIP	1K	5%	1/10W
						R114	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R030	1-216-049-91	RES, CHIP	1K	5%	1/10W						
R032	1-216-049-91	RES, CHIP	1K	5%	1/10W	R115	1-216-043-91	RES, CHIP	560	5%	1/10W
R033	1-216-049-91	RES, CHIP	1K	5%	1/10W	R116	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R035	1-216-025-91	RES, CHIP	100	5%	1/10W	R117	1-216-043-91	RES, CHIP	560	5%	1/10W
R036	1-216-025-91	RES, CHIP	100	5%	1/10W	R118	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
						R119	1-216-073-00	METAL CHIP	10K	5%	1/10W
R039	1-216-075-00	METAL CHIP	12K	5%	1/10W						
R040	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R120	1-216-073-00	METAL CHIP	10K	5%	1/10W
R046	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R121	1-219-107-91	RES, CHIP	1.5	5%	1/8W
R050	1-216-077-00	METAL CHIP	15K	5%	1/10W	R122	1-219-107-91	RES, CHIP	1.5	5%	1/8W
R051	1-216-073-00	METAL CHIP	10K	5%	1/10W	R125	1-219-107-91	RES, CHIP	1.5	5%	1/8W
						R126	1-216-049-91	RES, CHIP	1K	5%	1/10W
R052	1-216-089-91	RES, CHIP	47K	5%	1/10W						
R053	1-216-049-91	RES, CHIP	1K	5%	1/10W	R127	1-216-049-91	RES, CHIP	1K	5%	1/10W
R054	1-216-295-91	SHORT	0			R128	1-216-049-91	RES, CHIP	1K	5%	1/10W
R055	1-216-049-91	RES, CHIP	1K	5%	1/10W	R129	1-216-049-91	RES, CHIP	1K	5%	1/10W
R059	1-216-043-91	RES, CHIP	560	5%	1/10W	R130	1-216-025-91	RES, CHIP	100	5%	1/10W
						R131	1-216-025-91	RES, CHIP	100	5%	1/10W
R060	1-216-049-91	RES, CHIP	1K	5%	1/10W						
R061	1-216-049-91	RES, CHIP	1K	5%	1/10W	R132	1-216-025-91	RES, CHIP	100	5%	1/10W
R063	1-216-049-91	RES, CHIP	1K	5%	1/10W	R133	1-216-075-00	METAL CHIP	12K	5%	1/10W
R064	1-216-049-91	RES, CHIP	1K	5%	1/10W	R134	1-216-072-00	METAL CHIP	9.1K	5%	1/10W
R066	1-216-025-91	RES, CHIP	100	5%	1/10W	R136	1-216-049-91	RES, CHIP	1K	5%	1/10W
						R137	1-216-049-91	RES, CHIP	1K	5%	1/10W
R067	1-216-073-00	METAL CHIP	10K	5%	1/10W						
R069	1-216-085-00	METAL CHIP	33K	5%	1/10W	R138	1-216-049-91	RES, CHIP	1K	5%	1/10W
R070	1-216-073-00	METAL CHIP	10K	5%	1/10W	R143	1-216-073-00	METAL CHIP	10K	5%	1/10W
R071	1-216-025-91	RES, CHIP	100	5%	1/10W	R146	1-216-295-91	SHORT	0		
R075	1-216-049-91	RES, CHIP	1K	5%	1/10W	R148	1-216-017-91	RES, CHIP	47	5%	1/10W
						R153	1-216-295-91	SHORT	0		
R076	1-216-057-00	METAL CHIP	2.2K	5%	1/10W						
R077	1-216-025-91	RES, CHIP	100	5%	1/10W	R154	1-216-295-91	SHORT	0		
R078	1-216-049-91	RES, CHIP	1K	5%	1/10W	R155	1-216-295-91	SHORT	0		
R079	1-216-073-00	METAL CHIP	10K	5%	1/10W	R158	1-216-121-91	RES, CHIP	1M	5%	1/10W
R080	1-216-025-91	RES, CHIP	100	5%	1/10W	R161	1-216-295-91	SHORT	0		
						R164	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R081	1-216-049-91	RES, CHIP	1K	5%	1/10W						
R082	1-216-073-00	METAL CHIP	10K	5%	1/10W	R165	1-216-017-91	RES, CHIP	47	5%	1/10W
R083	1-216-089-91	RES, CHIP	47K	5%	1/10W	R167	1-216-017-91	RES, CHIP	47	5%	1/10W
R084	1-216-025-91	RES, CHIP	100	5%	1/10W	R168	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R085	1-216-049-91	RES, CHIP	1K	5%	1/10W	R169	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
						R171	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R086	1-216-049-91	RES, CHIP	1K	5%	1/10W						
R087	1-216-049-91	RES, CHIP	1K	5%	1/10W	R176	1-216-033-00	METAL CHIP	220	5%	1/10W
R088	1-216-049-91	RES, CHIP	1K	5%	1/10W	R182	1-216-121-91	RES, CHIP	1M	5%	1/10W
R089	1-216-049-91	RES, CHIP	1K	5%	1/10W	R193	1-216-079-00	METAL CHIP	18K	5%	1/10W
R090	1-216-081-00	METAL CHIP	22K	5%	1/10W	R194	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
						R195	1-216-079-00	METAL CHIP	18K	5%	1/10W
R091	1-216-081-00	METAL CHIP	22K	5%	1/10W						
R092	1-216-089-91	RES, CHIP	47K	5%	1/10W	R196	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R093	1-216-049-91	RES, CHIP	1K	5%	1/10W	R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R094	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W	R203	1-216-121-91	RES, CHIP	1M	5%	1/10W
R095	1-216-645-11	METAL CHIP	560	0.5%	1/10W	R206	1-216-073-00	METAL CHIP	10K	5%	1/10W
						R207	1-216-073-00	METAL CHIP	10K	5%	1/10W
R096	1-216-651-11	METAL CHIP	1K	0.5%	1/10W						
R097	1-216-073-00	METAL CHIP	10K	5%	1/10W	R208	1-216-045-00	METAL CHIP	680	5%	1/10W
R098	1-216-121-91	RES, CHIP	1M	5%	1/10W	R209	1-216-045-00	METAL CHIP	680	5%	1/10W
R099	1-216-105-91	RES, CHIP	220K	5%	1/10W	R211	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W
R102	1-216-089-91	RES, CHIP	47K	5%	1/10W	R212	1-216-645-11	METAL CHIP	560	0.5%	1/10W
						R213	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R103	1-216-089-91	RES, CHIP	47K	5%	1/10W						
R104	1-216-295-91	SHORT	0			R214	1-216-073-00	METAL CHIP	10K	5%	1/10W

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Ref. No.	Part No.	Description	Remark
R215	1-216-105-91	RES, CHIP 220K 5%	1/10W
R216	1-216-081-00	METAL CHIP 22K 5%	1/10W
R217	1-216-073-00	METAL CHIP 10K 5%	1/10W
R218	1-216-081-00	METAL CHIP 22K 5%	1/10W
R220	1-216-043-91	RES, CHIP 560 5%	1/10W
R221	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R225	1-216-295-91	SHORT 0	
R227	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R228	1-216-043-91	RES, CHIP 560 5%	1/10W
R229	1-216-048-00	METAL CHIP 910 5%	1/10W
R230	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R231	1-216-048-00	METAL CHIP 910 5%	1/10W
R232	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R233	1-216-089-91	RES, CHIP 47K 5%	1/10W
R234	1-216-075-00	METAL CHIP 12K 5%	1/10W
R235	1-216-072-00	METAL CHIP 9.1K 5%	1/10W
R241	1-216-073-00	METAL CHIP 10K 5%	1/10W
R244	1-216-077-00	METAL CHIP 15K 5%	1/10W
R245	1-217-671-11	METAL CHIP 1 5%	1/10W
R247	1-216-073-00	METAL CHIP 10K 5%	1/10W
R248	1-217-671-11	METAL CHIP 1 5%	1/10W
R249	1-217-671-11	METAL CHIP 1 5%	1/10W
R250	1-217-671-11	METAL CHIP 1 5%	1/10W
R253	1-216-073-00	METAL CHIP 10K 5%	1/10W
R256	1-216-075-00	METAL CHIP 12K 5%	1/10W
R257	1-216-079-00	METAL CHIP 18K 5%	1/10W
R259	1-216-295-91	SHORT 0	
R262	1-216-093-00	METAL CHIP 68K 5%	1/10W
R268	1-216-097-91	RES, CHIP 100K 5%	1/10W
R270	1-216-073-00	METAL CHIP 10K 5%	1/10W
R271	1-216-073-00	METAL CHIP 10K 5%	1/10W
R274	1-216-073-00	METAL CHIP 10K 5%	1/10W
R275	1-216-099-00	METAL CHIP 120K 5%	1/10W
R283	1-216-089-91	RES, CHIP 47K 5%	1/10W
R284	1-216-025-91	RES, CHIP 100 5%	1/10W
R285	1-216-025-91	RES, CHIP 100 5%	1/10W
R286	1-216-049-91	RES, CHIP 1K 5%	1/10W
R290	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R506	1-216-049-91	RES, CHIP 1K 5%	1/10W
R516	1-216-295-91	SHORT 0	
R517	1-216-665-11	METAL CHIP 3.9K 0.5%	1/10W
R518	1-216-655-11	METAL CHIP 1.5K 0.5%	1/10W
R519	1-216-089-91	RES, CHIP 47K 5%	1/10W
R520	1-216-089-91	RES, CHIP 47K 5%	1/10W
R521	1-216-089-91	RES, CHIP 47K 5%	1/10W
R524	1-216-089-91	RES, CHIP 47K 5%	1/10W
R525	1-216-025-91	RES, CHIP 100 5%	1/10W
R526	1-216-025-91	RES, CHIP 100 5%	1/10W
R528	1-216-295-91	SHORT 0	
R529	1-219-107-91	RES, CHIP 1.5 5%	1/8W
R530	1-219-107-91	RES, CHIP 1.5 5%	1/8W
R531	1-219-107-91	RES, CHIP 1.5 5%	1/8W
R535	1-216-089-91	RES, CHIP 47K 5%	1/10W
R536	1-216-295-91	SHORT 0	
R537	1-216-295-91	SHORT 0	
R538	1-216-295-91	SHORT 0	
R541	1-216-073-00	METAL CHIP 10K 5%	1/10W
R542	1-216-073-00	METAL CHIP 10K 5%	1/10W
R543	1-216-025-91	RES, CHIP 100 5%	1/10W

Ref. No.	Part No.	Description			Remark
R545	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R546	1-216-073-00	METAL CHIP	10K	5%	1/10W
R547	1-216-025-91	RES, CHIP	100	5%	1/10W
R549	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R550	1-216-073-00	METAL CHIP	10K	5%	1/10W
R551	1-216-089-91	RES, CHIP	47K	5%	1/10W
R552	1-216-089-91	RES, CHIP	47K	5%	1/10W
R553	1-216-073-00	METAL CHIP	10K	5%	1/10W
R554	1-216-073-00	METAL CHIP	10K	5%	1/10W
R555	1-216-073-00	METAL CHIP	10K	5%	1/10W
R556	1-216-025-91	RES, CHIP	100	5%	1/10W
R560	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R561	1-216-049-91	RES, CHIP	1K	5%	1/10W
R562	1-216-049-91	RES, CHIP	1K	5%	1/10W
R563	1-216-049-91	RES, CHIP	1K	5%	1/10W
R564	1-216-049-91	RES, CHIP	1K	5%	1/10W
R565	1-216-049-91	RES, CHIP	1K	5%	1/10W
R566	1-216-049-91	RES, CHIP	1K	5%	1/10W
R567	1-216-017-91	RES, CHIP	47	5%	1/10W
R568	1-216-017-91	RES, CHIP	47	5%	1/10W
R569	1-216-017-91	RES, CHIP	47	5%	1/10W
R570	1-216-017-91	RES, CHIP	47	5%	1/10W
R572	1-216-295-91	SHORT	0		
R573	1-216-049-91	RES, CHIP	1K	5%	1/10W
R574	1-216-049-91	RES, CHIP	1K	5%	1/10W
R575	1-216-049-91	RES, CHIP	1K	5%	1/10W
< VIBRATOR >					
X001	1-760-655-21	VIBRATOR, CRYSTAL (20MHz)			
FP-406 BOARD					

(Ref No. 5,000 Series)					
1-658-990-11		FP-406 FLEXIBLE BOARD			
3-318-201-11		SCREW (B) (1.4X3), TAPPING			
3-967-690-01		HOLDER, MIC			
3-970-665-01		CLEANER, MIC			
< CONNECTOR >					
CN901	1-770-312-21	CONNECTOR 4P			
< SWITCH >					
S901	1-762-551-11	SWITCH, PUSH (REC PROOF)			
S902	1-572-288-11	SWITCH, PUSH (C IN)			
* A-7073-469-A FR-136 BOARD, COMPLETE					

(Ref No. 5,000 Series)					
* 3-987-166-01 HOLDER, INDICATION TUBE					
< BUZZER >					
BZ101	1-529-104-11	BUZZER, PIEZOELECTRIC			
< CAPACITOR >					
C109	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C110	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C111	1-164-156-11	CERAMIC CHIP	0.1uF		25V

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C112	1-113-682-11	TANTAL. CHIP 33uF 20% 10V		Q107	8-729-421-19	TRANSISTOR UN2213-TX	
C113	1-113-682-11	TANTAL. CHIP 33uF 20% 10V		Q110	8-729-421-19	TRANSISTOR UN2213-TX	
C114	1-164-156-11	CERAMIC CHIP 0.1uF 25V		< RESISTOR >			
C115	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V		R103	1-216-842-11	METAL CHIP 56K 5% 1/16W	
C116	1-126-923-11	ELECT 220uF 20% 10V		R104	1-216-813-11	METAL CHIP 220 5% 1/16W	
C117	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V		R105	1-216-811-11	METAL CHIP 150 5% 1/16W	
C118	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V		R106	1-216-841-11	METAL CHIP 47K 5% 1/16W	
< CONNECTOR >				R107	1-216-841-11	METAL CHIP 47K 5% 1/16W	
CN104	1-774-770-11	CONNECTOR, FFC/FPC 30P		R108	1-216-841-11	METAL CHIP 47K 5% 1/16W	
< DIODE >				R109	1-216-841-11	METAL CHIP 47K 5% 1/16W	
D101	8-719-104-34	DIODE MA151WA-TX		R110	1-216-841-11	METAL CHIP 47K 5% 1/16W	
D102	8-719-106-08	DIODE RD6.2M-T1B2		R111	1-216-841-11	METAL CHIP 47K 5% 1/16W	
D108	8-719-061-58	DIODE CL-200Y-C-TU (DUP)		R112	1-216-841-11	METAL CHIP 47K 5% 1/16W	
D109	8-719-989-53	DIODE CL-200HR-C-TUL (REC)		R113	1-216-841-11	METAL CHIP 47K 5% 1/16W	
D110	8-719-061-58	DIODE CL-200Y-C-TU (PAUSE)		R114	1-216-837-11	METAL CHIP 22K 5% 1/16W	
D111	8-719-061-58	DIODE CL-200Y-C-TU (FF)		R115	1-216-837-11	METAL CHIP 22K 5% 1/16W	
D112	8-719-066-79	DIODE CL-200YG-C-TU (PLAY)		R116	1-216-817-11	METAL CHIP 470 5% 1/16W	
D113	8-719-027-84	DIODE CL-155UR/G-DT (ON/STANDBY)		R119	1-216-797-11	METAL CHIP 10 5% 1/16W	
D114	8-719-106-08	DIODE RD6.2M-T1B2		R120	1-216-797-11	METAL CHIP 10 5% 1/16W	
D115	8-719-106-08	DIODE RD6.2M-T1B2		R121	1-216-797-11	METAL CHIP 10 5% 1/16W	
D116	8-719-106-08	DIODE RD6.2M-T1B2		R122	1-216-797-11	METAL CHIP 10 5% 1/16W	
D117	8-719-061-58	DIODE CL-200Y-C-TU (REW)		R123	1-216-841-11	METAL CHIP 47K 5% 1/16W	
< FERRITE BEAD >				R124	1-216-837-11	METAL CHIP 22K 5% 1/16W	
FB101	1-414-445-11	INDUCTOR CHIP 0UH		R125	1-216-833-11	METAL CHIP 10K 5% 1/16W	
FB102	1-414-445-11	INDUCTOR CHIP 0UH		R126	1-216-833-11	METAL CHIP 10K 5% 1/16W	
FB103	1-414-445-11	INDUCTOR CHIP 0UH		R129	1-216-837-11	METAL CHIP 22K 5% 1/16W	
FB104	1-414-445-11	INDUCTOR CHIP 0UH		R130	1-216-833-11	METAL CHIP 10K 5% 1/16W	
FB105	1-414-445-11	INDUCTOR CHIP 0UH		R131	1-216-833-11	METAL CHIP 10K 5% 1/16W	
FB106	1-414-445-11	INDUCTOR CHIP 0UH		R138	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
FB107	1-414-445-11	INDUCTOR CHIP 0UH		R139	1-216-837-11	METAL CHIP 22K 5% 1/16W	
FB108	1-414-445-11	INDUCTOR CHIP 0UH		R140	1-216-833-11	METAL CHIP 10K 5% 1/16W	
FB109	1-414-445-11	INDUCTOR CHIP 0UH		R141	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
FB110	1-414-445-11	INDUCTOR CHIP 0UH		R142	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
FB111	1-414-445-11	INDUCTOR CHIP 0UH		R143	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
FB112	1-414-229-11	INDUCTOR CHIP 0UH		R144	1-216-845-11	METAL CHIP 100K 5% 1/16W	
FB113	1-414-229-11	INDUCTOR CHIP 0UH		R145	1-216-797-11	METAL CHIP 10 5% 1/16W	
FB114	1-414-229-11	INDUCTOR CHIP 0UH		R146	1-216-797-11	METAL CHIP 10 5% 1/16W	
FB115	1-414-229-11	INDUCTOR CHIP 0UH		R147	1-216-797-11	METAL CHIP 10 5% 1/16W	
FB116	1-414-229-11	INDUCTOR CHIP 0UH		R148	1-216-797-11	METAL CHIP 10 5% 1/16W	
FB117	1-414-229-11	INDUCTOR CHIP 0UH		R149	1-216-821-11	METAL CHIP 1K 5% 1/16W	
FB118	1-414-445-11	INDUCTOR CHIP 0UH		R151	1-216-813-11	METAL CHIP 220 5% 1/16W	
< IC >				R152	1-216-814-11	METAL CHIP 270 5% 1/16W	
IC103	8-759-056-81	IC M66312FP-T1		R153	1-216-813-11	METAL CHIP 220 5% 1/16W	
IC104	8-759-438-82	IC uPD16311GC-AB6		R154	1-216-813-11	METAL CHIP 220 5% 1/16W	
IC105	8-749-923-29	IC RS-20E-T		R155	1-216-811-11	METAL CHIP 150 5% 1/16W	
< FLUORECENT INDICATOR >				R156	1-216-813-11	METAL CHIP 220 5% 1/16W	
ND101	1-517-769-11	TUBE, FLUORESCENT INDICATOR		< SWITCH >			
< TRANSISTOR >				S101	1-762-333-21	SWITCH, TACTILE (RESET)	
Q101	8-729-424-18	TRANSISTOR UN2113-TX		S102	1-572-272-11	SWITCH, SLIDE (LOCAL/REMOTE)	
Q103	8-729-421-19	TRANSISTOR UN2213-TX		S104	1-572-342-11	SWITCH, SLIDE (TIMER)	
Q104	8-729-421-19	TRANSISTOR UN2213-TX		S105	1-572-342-11	SWITCH, SLIDE (AUDIO MONITOR)	
Q105	8-729-421-19	TRANSISTOR UN2213-TX		S106	1-762-333-21	SWITCH, TACTILE (INPUT SELECT)	
Q106	8-729-421-19	TRANSISTOR UN2213-TX		S107	1-572-342-11	SWITCH, SLIDE (COUNTER SELECT)	
				S108	1-692-682-11	SWITCH, TACTILE (RUBBER) (EJECT)	
				S109	1-692-682-11	SWITCH, TACTILE (RUBBER) (COUNTER RESET)	
				S111	1-692-682-11	SWITCH, TACTILE (RUBBER) (STOP)	
				S112	1-692-682-11	SWITCH, TACTILE (RUBBER) (REW)	

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Ref. No.	Part No.	Description	Remark
S113	1-692-682-11	SWITCH, TACTILE (RUBBER) (PLAY)	
S114	1-692-682-11	SWITCH, TACTILE (RUBBER) (FF)	
S115	1-692-682-11	SWITCH, TACTILE (RUBBER) (PAUSE)	
S116	1-692-682-11	SWITCH, TACTILE (RUBBER) (REC)	
S117	1-762-333-21	SWITCH, TACTILE	
S118	1-762-333-21	SWITCH, TACTILE	
S119	1-762-333-21	SWITCH, TACTILE (SET)	
S120	1-762-333-21	SWITCH, TACTILE (MENU)	
S121	1-692-682-11	SWITCH, TACTILE (RUBBER) (POWER)	
S122	1-692-682-11	SWITCH, TACTILE (RUBBER) (DUP)	

* A-7073-576-A HG-1 BOARD, COMPLETE

 (Ref No. 8,000 Series)

< CAPACITOR >

C001	1-163-145-00	CERAMIC CHIP	0.0015uF	
C002	1-163-038-11	CERAMIC CHIP	0.1uF	
C003	1-126-157-11	ELECT	10uF	16V
C004	1-124-245-11	ELECT	4.7uF	35V
C005	1-126-157-11	ELECT	10uF	16V

< CONNECTOR >

CN001	1-958-813-11	CONNECTOR 6P	
* CN002	1-506-489-11	CONNECTOR 10P	

< DIODE >

D001	8-719-106-89	DIODE	RD15M-T1B2
D002	8-719-106-89	DIODE	RD15M-T1B2
D003	8-719-800-76	DIODE	1SSS123-T1
D004	8-719-800-76	DIODE	1SSS123-T1

< IC >

IC001	8-759-248-87	IC	MM1256XF-BE
IC002	8-759-929-26	IC	TL431CPS-E20

< TRANSISTOR >

Q001	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
Q002	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
Q003	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
Q004	8-729-014-91	TRANSISTOR	2SD2185S-TX

< RESISTOR >

R001	1-208-830-11	RES, CHIP	100K	
R002	1-208-830-11	RES, CHIP	100K	
R003	1-208-830-11	RES, CHIP	100K	
R004	1-208-848-11	RES, CHIP	560K	
R005	1-208-830-11	RES, CHIP	100K	
R007	1-208-830-11	RES, CHIP	100K	
R008	1-208-814-11	RES, CHIP	22K	
R009	1-208-806-11	RES, CHIP	10K	
R010	1-208-822-11	RES, CHIP	47K	
R011	1-208-822-11	RES, CHIP	47K	
R012	1-208-208-00	RES, CHIP	2.7K	1/8W
R013	1-208-208-00	RES, CHIP	2.7K	1/8W
R014	1-208-795-11	RES, CHIP	3.6K	
R015	1-208-208-00	RES, CHIP	2.7K	1/8W
R016	1-208-208-00	RES, CHIP	2.7K	1/8W

Ref. No.	Part No.	Description	Remark
		< RELAY >	

RY001 1-755-259-11 RELAY

* A-7073-471-A HP-100 BOARD, COMPLETE

 (Ref No. 5,000 Series)

< CAPACITOR >

C001	1-128-004-11	ELECT CHIP	10uF	20%	16V
C002	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C003	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C004	1-128-004-11	ELECT CHIP	10uF	20%	16V
C005	1-162-923-11	CERAMIC CHIP	47PF	5%	50V

C006	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C007	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C008	1-128-004-11	ELECT CHIP	10uF	20%	16V
C009	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C010	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V

C011	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
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< CONNECTOR >

CN001 1-566-528-11 CONNECTOR, FPC (ZIF) 12P

< DIODE >

D001	8-719-421-59	DIODE	MA3075WA-(TX)
D002	8-719-421-59	DIODE	MA3075WA-(TX)
D003	8-719-421-59	DIODE	MA3075WA-(TX)
D004	8-719-421-59	DIODE	MA3075WA-(TX)
D005	8-719-421-59	DIODE	MA3075WA-(TX)

D006	8-719-421-59	DIODE	MA3075WA-(TX)
D007	8-719-421-59	DIODE	MA3075WA-(TX)
D008	8-719-421-59	DIODE	MA3075WA-(TX)
D009	8-719-421-59	DIODE	MA3075WA-(TX)
D010	8-719-421-59	DIODE	MA3075WA-(TX)

D011	8-719-421-59	DIODE	MA3075WA-(TX)
D012	8-719-421-59	DIODE	MA3075WA-(TX)

< FERRITE BEAD >

FB001	1-500-241-21	FERRITE	0UH
FB002	1-500-241-21	FERRITE	0UH
FB003	1-500-241-21	FERRITE	0UH

< IC >

IC001 8-759-356-17 IC NJM4556AM-A-TE2

< JACK >

J001 1-569-809-11 JACK (SMALL TYPE) (PHONES)

< RESISTOR >

R001	1-216-833-11	METAL CHIP	10K	5%	1/16W
R002	1-216-821-11	METAL CHIP	1K	5%	1/16W
R003	1-216-821-11	METAL CHIP	1K	5%	1/16W
R004	1-216-833-11	METAL CHIP	10K	5%	1/16W
R005	1-216-835-11	METAL CHIP	15K	5%	1/16W
R006	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R007	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R008	1-216-835-11	METAL CHIP	15K	5%	1/16W

Ref. No.	Part No.	Description	Remark		
R009	1-216-821-11	METAL CHIP 1K	5%	1/16W	
R010	1-216-821-11	METAL CHIP 1K	5%	1/16W	
R011	1-216-809-11	METAL CHIP 100	5%	1/16W	
R012	1-216-809-11	METAL CHIP 100	5%	1/16W	
< VARIABLE RESISTOR >					
RV001	1-238-612-11	RES, VAR, CARBON 20K/20K (PHONE LEVEL)			
RV002	1-238-744-11	RES, VAR, CARBON, 50K (L REC LEVEL)			
RV003	1-238-744-11	RES, VAR, CARBON, 50K (R REC LEVEL)			

*	A-7067-130-A	JC-19 BOARD, COMPLETE (DSR-20)			
*	A-7067-126-A	JC-19 BOARD, COMPLETE (DSR-20P)			
(Ref No. 2,000 Series)					
	7-685-132-19	SCREW +P 2.6X5 TYPE2 NON-SLIT			
< CAPACITOR >					
C101	1-104-847-11	TANTAL. CHIP 22uF	20%	4V	
C102	1-104-847-11	TANTAL. CHIP 22uF	20%	4V	
C103	1-104-847-11	TANTAL. CHIP 22uF	20%	4V	
C107	1-135-091-00	TANTALUM CHIP 1uF	20%	16V	
C108	1-135-091-00	TANTALUM CHIP 1uF	20%	16V	
C109	1-135-091-00	TANTALUM CHIP 1uF	20%	16V	
C110	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C111	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C112	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C116	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C117	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C118	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C119	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V	
C120	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V	
C121	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V	
C122	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C123	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C124	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C125	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C127	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C128	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C129	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C130	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C131	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C132	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C133	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C135	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C136	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C137	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C138	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C139	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C141	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C143	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C148	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C149	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C150	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C151	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C152	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C153	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C154	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C155	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	

Ref. No.	Part No.	Description	Remark		
C156	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C157	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C158	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C159	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C160	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C161	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C162	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C163	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C164	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C165	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C166	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C167	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C168	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C170	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C171	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C172	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C173	1-110-569-11	TANTAL. CHIP 47uF	20%	6.3V	
C174	1-110-569-11	TANTAL. CHIP 47uF	20%	6.3V	
C175	1-110-569-11	TANTAL. CHIP 47uF	20%	6.3V	
C179	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C180	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C181	1-162-921-11	CERAMIC CHIP 33PF	5%	50V	
C182	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C183	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C184	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C185	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C186	1-104-847-11	TANTAL. CHIP 22uF	20%	4V	
C187	1-104-847-11	TANTAL. CHIP 22uF	20%	4V	
C201	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C202	1-164-357-11	CERAMIC CHIP 1000PF	5%	50V	
C203	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C204	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C205	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C206	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C207	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C208	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C209	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C210	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C211	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V	
C212	1-104-847-11	TANTAL. CHIP 22uF	20%	4V	
C214	1-162-926-11	CERAMIC CHIP 82PF	5%	50V	
C215	1-164-392-11	CERAMIC CHIP 390PF	5%	50V	
C216	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C217	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C218	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C219	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	
C220	1-110-569-11	TANTAL. CHIP 47uF	20%	6.3V	
C221	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C223	1-135-091-00	TANTALUM CHIP 1uF	20%	16V	
C224	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C225	1-135-091-00	TANTALUM CHIP 1uF	20%	16V	
C226	1-162-968-11	CERAMIC CHIP 0.0047uF	10%	50V	
C227	1-162-967-11	CERAMIC CHIP 0.0033uF	10%	50V	
C229	1-104-912-11	TANTAL. CHIP 3.3uF	20%	16V	
C231	1-164-315-11	CERAMIC CHIP 470PF	5%	50V	
C233	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V	
C234	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C238	1-162-974-11	CERAMIC CHIP 0.01uF		50V	
C241	1-162-964-11	CERAMIC CHIP 0.001uF	10%	50V	

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C243	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C514	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C245	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	C515	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C516	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C247	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C517	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C518	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C249	1-104-908-11	TANTAL. CHIP	47uF	20%	4V	C519	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C520	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C252	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C253	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C522	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C254	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C523	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C255	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V	C524	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C701	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C257	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V	C702	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C258	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C703	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C259	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C704	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C260	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	C705	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C261	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C706	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C262	1-165-128-11	CERAMIC CHIP	0.22uF		16V	C707	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C401	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C708	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C402	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C709	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C403	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C710	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C711	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C712	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C406	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C713	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C407	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C714	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C408	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C715	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C801	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C802	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C803	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C421	1-111-253-11	TANTAL. CHIP	100uF	20%	6.3V	C804	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C422	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C807	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C423	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C809	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C424	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C810	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C425	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C811	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C426	1-164-505-11	CERAMIC CHIP	2.2uF		16V	C812	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C427	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C813	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C428	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C814	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C429	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C815	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C430	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C831	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C432	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C832	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C433	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C833	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C434	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C834	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C435	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C835	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C436	1-164-505-11	CERAMIC CHIP	2.2uF		16V	C837	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C437	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C838	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C438	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C839	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C439	1-164-160-11	CERAMIC CHIP	20PF	5%	50V	C840	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C440	1-164-160-11	CERAMIC CHIP	20PF	5%	50V	C843	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C441	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C844	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C442	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C845	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C501	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C846	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C502	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C847	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C503	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C848	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C849	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C850	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C851	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C511	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C852	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C512	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C853	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C513	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	C854	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C855	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	< DIODE >			
C856	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	D201	8-719-041-39	DIODE KV1470TL00	
C857	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D421	8-719-027-95	DIODE HSM88WK-TL	
C859	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D422	8-719-055-86	DIODE KV1470TL1-3	
C860	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V	D423	8-719-027-95	DIODE HSM88WK-TL	
C861	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D424	8-719-055-86	DIODE KV1470TL1-3	
C862	1-135-151-21	TANTALUM CHIP 4.7uF 20%	4V	D425	8-719-055-86	DIODE KV1470TL1-3	
C863	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V	D501	8-719-404-49	DIODE MA111-TX	
C864	1-115-467-11	CERAMIC CHIP 0.22uF 10%	10V	D503	8-719-421-27	DIODE MA728-TX	
C865	1-110-569-11	TANTAL. CHIP 47uF 20%	6.3V	D504	8-719-404-49	DIODE MA111-TX	
C901	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	D901	8-719-404-49	DIODE MA111-TX	
C902	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D902	8-719-055-86	DIODE KV1470TL1-3	
C903	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D903	8-719-404-49	DIODE MA111-TX	
C904	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	D910	8-719-404-49	DIODE MA111-TX	
C905	1-164-360-11	CERAMIC CHIP 0.1uF	16V	< FERRITE BEAD >			
C906	1-110-569-11	TANTAL. CHIP 47uF 20%	6.3V	FB401	1-543-955-11	FERRITE 0UH	
C907	1-164-360-11	CERAMIC CHIP 0.1uF	16V	FB402	1-543-955-11	FERRITE 0UH	
C908	1-164-360-11	CERAMIC CHIP 0.1uF	16V	< FILTER >			
C909	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	FL101	1-233-345-21	FILTER, LOW PASS (5.5MHz)	
C910	1-115-467-11	CERAMIC CHIP 0.22uF 10%	10V	FL102	1-233-345-21	FILTER, LOW PASS (5.5MHz)	
C911	1-164-360-11	CERAMIC CHIP 0.1uF	16V	FL103	1-233-345-21	FILTER, LOW PASS (5.5MHz)	
C912	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	< IC >			
C914	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V	IC009	8-759-338-78	IC BA10324AFV-E2	
C915	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC010	8-759-338-78	IC BA10324AFV-E2	
C916	1-162-923-11	CERAMIC CHIP 47PF 5%	50V	IC011	8-759-338-78	IC BA10324AFV-E2	
C917	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V	IC012	8-759-338-78	IC BA10324AFV-E2	
C919	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC013	8-759-510-71	IC BA10358F-E2	
C920	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC014	8-759-359-51	IC NJM431M (TE2)	
C921	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC015	8-752-352-09	IC CXD2300Q-T4	
C922	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V	IC016	8-752-352-09	IC CXD2300Q-T4	
C924	1-164-360-11	CERAMIC CHIP 0.1uF	16V	IC017	8-752-352-09	IC CXD2300Q-T4	
C926	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC018	8-759-066-57	IC TC74HC4066AFS-EL	
C927	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V	IC019	8-759-447-75	IC S-81322HG-KW-T1	
C929	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC200	8-752-380-04	IC CXD3100R	
C930	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	IC205	8-759-343-09	IC CXD2193AR-ER	
C931	1-115-467-11	CERAMIC CHIP 0.22uF 10%	10V	IC206	8-759-058-62	IC TC7S08FU (TE85R)	
C932	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	IC207	8-759-368-81	IC TK11630UTL	
C933	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC209	8-759-079-66	IC TC74VHC123AFS (EL)	
C934	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	IC210	8-759-485-79	IC TC7SET08FU (TE85R)	
C935	1-164-360-11	CERAMIC CHIP 0.1uF	16V	IC211	8-759-239-58	IC TC74HC221AF (EL)	
C936	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	IC212	8-759-082-55	IC TC7W00FU (TE12R)	
C937	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC213	8-759-066-59	IC TC74HC4053AFS-EL	
C940	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	IC214	8-759-491-31	IC TC74VHC00AF (EL)	
C941	1-109-982-11	CERAMIC CHIP 1uF 10%	10V	IC401	8-752-380-73	IC CXD3103R	
C942	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	IC402	8-759-328-28	IC ZA4024	
< CONNECTOR >				IC403	8-759-328-28	IC ZA4024	
CN101	1-506-474-11	PIN, CONNECTOR 9P		IC410	8-759-433-17	IC uPD482445LG4-B10-9MH-E2-HDC	
CN103	1-774-666-11	CONNECTOR, FFC/FPC 30P		IC411	8-759-525-63	IC uPD82094GD-001-LKL	
CN104	1-774-666-11	CONNECTOR, FFC/FPC 30P		IC421	8-752-893-78	IC CXP912032-060R-T6	
CN411	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P		IC422	8-752-378-75	IC CXD3106R	
CN412	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P		IC501	8-759-525-90	IC S579C11PZ-CMX110-TEB	
CN501	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P		IC502	8-759-445-93	IC AK6440AM-E2	
CN503	1-750-303-41	CONNECTOR, BOARD TO BOARD 20P		IC503	8-759-058-58	IC TC7S04FU (TE85R)	
* CN701	1-564-005-11	PIN, CONNECTOR 8P		IC504	8-759-427-85	IC MB88146APFV-G-BND-ER	
CN702	1-770-543-21	CONNECTOR, FFC/FPC 40P		IC510	8-759-431-95	IC S-81230SGUP-DQB-T1	
CN831	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P		IC511	8-759-512-69	IC S-81350HG-KD-T1	
< TRIMMER >							
CT201	1-141-423-61	CAP, ADJ 20PF					

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
IC701	8-752-379-54	IC CXD2194AR		L904	1-414-398-11	INDUCTOR 10uH	
IC702	8-759-432-00	IC TSB11LV01PT-TEB		L905	1-411-273-21	COIL, VARIABLE	
IC703	8-759-465-99	IC HD6433837TB55X					
IC801	8-752-352-30	IC CXD2705AQ		L907	1-414-398-11	INDUCTOR 10uH	
IC802	8-759-530-57	IC TLV431ACDBV2				< TRANSISTOR >	
IC804	8-759-465-80	IC TC74ACT08FS (EL)					
				Q026	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC805	8-752-379-31	IC CXD3107R		Q027	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC807	8-759-475-36	IC TC74LCX08FT (EL)		Q028	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC831	8-759-358-47	IC NJM2115V (TE2)		Q029	8-729-202-38	TRANSISTOR 2SC3326N-TE85L-B	
IC832	8-759-358-47	IC NJM2115V (TE2)		Q030	8-729-202-38	TRANSISTOR 2SC3326N-TE85L-B	
IC833	8-759-358-47	IC NJM2115V (TE2)					
				Q031	8-729-202-38	TRANSISTOR 2SC3326N-TE85L-B	
IC835	8-759-358-47	IC NJM2115V (TE2)		Q032	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC836	8-759-358-47	IC NJM2115V (TE2)		Q033	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC837	8-759-471-38	IC AK4520A-VF-E2		Q034	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC838	8-759-357-67	IC TK15125MTL		Q035	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC840	8-759-358-47	IC NJM2115V (TE2)					
				Q036	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC841	8-759-494-88	IC TC75S56F (TE85R)		Q037	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC901	8-759-079-66	IC TC74VHC123AFS (EL)		Q039	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC902	8-759-079-61	IC TC74VHC74FS (EL)		Q040	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC903	8-759-083-94	IC TC7W74FU (TE12R)		Q041	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC904	8-759-429-28	IC CXD8630R					
				Q042	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC906	8-759-079-66	IC TC74VHC123AFS (EL)		Q043	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC907	8-759-195-81	IC TC7S86FU (TE85R)		Q044	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC908	8-759-082-58	IC TC7W08FU (TE12R)		Q045	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
IC909	8-759-079-61	IC TC74VHC74FS (EL)		Q048	8-729-402-42	TRANSISTOR UN5213-TX	
IC911	8-759-327-04	IC CXD2913Q					
				Q050	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC914	8-759-485-40	IC TLV2231CDBV2		Q051	8-729-427-83	TRANSISTOR XP6501-TXE	
IC915	8-759-082-61	IC TC4W53FU (TE12R)		Q052	8-729-905-35	TRANSISTOR 2SC4081T106R	
IC916	8-759-058-62	IC TC7S08FU (TE85R)		Q053	8-729-427-83	TRANSISTOR XP6501-TXE	
				Q200	8-729-905-35	TRANSISTOR 2SC4081T106R	
		< COIL >					
L011	1-414-398-11	INDUCTOR 10uH		Q201	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L012	1-414-398-11	INDUCTOR 10uH		Q501	8-729-905-35	TRANSISTOR 2SC4081T106R	
L013	1-414-398-11	INDUCTOR 10uH		Q502	8-729-905-35	TRANSISTOR 2SC4081T106R	
L014	1-414-398-11	INDUCTOR 10uH		Q504	8-729-403-35	TRANSISTOR UN5113-TX	
L015	1-414-398-11	INDUCTOR 10uH		Q505	8-729-427-70	TRANSISTOR XP4401-TXE	
L016	1-414-398-11	INDUCTOR 10uH		Q506	8-729-101-07	TRANSISTOR 2SB798-T1-DLDR	
L017	1-414-398-11	INDUCTOR 10uH		Q801	8-729-905-35	TRANSISTOR 2SC4081T106R	
L018	1-414-398-11	INDUCTOR 10uH		Q832	8-729-015-74	TRANSISTOR UN5111-TX	
L102	1-414-398-11	INDUCTOR 10uH		Q902	8-729-905-35	TRANSISTOR 2SC4081T106R	
L200	1-414-398-11	INDUCTOR 10uH		Q903	8-729-402-42	TRANSISTOR UN5213-TX	
L202	1-410-390-11	INDUCTOR CHIP 56uH		Q910	8-729-015-76	TRANSISTOR UN5211-TX	
L203	1-414-398-11	INDUCTOR 10uH		Q911	8-729-015-76	TRANSISTOR UN5211-TX	
L204	1-414-398-11	INDUCTOR 10uH					
L205	1-411-275-21	COIL, VARIABLE				< RESISTOR >	
L206	1-410-655-31	INDUCTOR CHIP 120uH					
				R002	1-216-864-11	METAL CHIP 0 5% 1/16W	
L401	1-414-398-11	INDUCTOR 10uH		R003	1-414-385-11	INDUCTOR 0UH	
L402	1-414-398-11	INDUCTOR 10uH		R004	1-414-385-11	INDUCTOR 0UH	
L421	1-410-740-31	INDUCTOR CHIP 0.82uH		R005	1-414-385-11	INDUCTOR 0UH	
L422	1-410-378-11	INDUCTOR CHIP 5.6uH		R009	1-414-385-11	INDUCTOR 0UH	
L423	1-414-398-11	INDUCTOR 10uH					
				R010	1-216-864-11	METAL CHIP 0 5% 1/16W	
L424	1-410-385-11	INDUCTOR CHIP 22uH		R011	1-216-864-11	METAL CHIP 0 5% 1/16W	
L501	1-414-398-11	INDUCTOR 10uH		R012	1-216-864-11	METAL CHIP 0 5% 1/16W	
L701	1-410-377-31	INDUCTOR CHIP 4.7uH		R013	1-216-864-11	METAL CHIP 0 5% 1/16W	
L702	1-414-398-11	INDUCTOR 10uH		R014	1-216-864-11	METAL CHIP 0 5% 1/16W	
L703	1-410-393-11	INDUCTOR CHIP 100uH					
				R015	1-216-864-11	METAL CHIP 0 5% 1/16W	
L801	1-410-369-11	INDUCTOR CHIP 1uH		R016	1-216-864-11	METAL CHIP 0 5% 1/16W	
L802	1-410-381-11	INDUCTOR CHIP 10uH		R017	1-414-385-11	INDUCTOR 0UH	
L901	1-414-398-11	INDUCTOR 10uH		R018	1-414-385-11	INDUCTOR 0UH	
				R020	1-414-385-11	INDUCTOR 0UH	

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R021	1-414-385-11	INDUCTOR	0UH	R136	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R023	1-216-864-11	METAL CHIP	0 5% 1/16W	R137	1-216-833-11	METAL CHIP	10K 5% 1/16W
R030	1-414-385-11	INDUCTOR	0UH	R138	1-216-833-11	METAL CHIP	10K 5% 1/16W
R033	1-216-864-11	METAL CHIP	0 5% 1/16W	R139	1-216-821-11	METAL CHIP	1K 5% 1/16W
R034	1-216-864-11	METAL CHIP	0 5% 1/16W	R140	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R035	1-216-864-11	METAL CHIP	0 5% 1/16W	R141	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R036	1-216-864-11	METAL CHIP	0 5% 1/16W	R142	1-216-821-11	METAL CHIP	1K 5% 1/16W
R037	1-216-864-11	METAL CHIP	0 5% 1/16W	R143	1-216-835-11	METAL CHIP	15K 5% 1/16W
R038	1-414-385-11	INDUCTOR	0UH	R145	1-216-821-11	METAL CHIP	1K 5% 1/16W
R039	1-216-864-11	METAL CHIP	0 5% 1/16W	R146	1-216-821-11	METAL CHIP	1K 5% 1/16W
R040	1-414-385-11	INDUCTOR	0UH	R147	1-216-821-11	METAL CHIP	1K 5% 1/16W
R041	1-414-385-11	INDUCTOR	0UH	R148	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R042	1-414-385-11	INDUCTOR	0UH	R149	1-216-824-11	METAL CHIP	1.8K 5% 1/16W
R043	1-216-864-11	METAL CHIP	0 5% 1/16W	R150	1-216-824-11	METAL CHIP	1.8K 5% 1/16W
R044	1-414-385-11	INDUCTOR	0UH	R151	1-216-824-11	METAL CHIP	1.8K 5% 1/16W
R045	1-216-864-11	METAL CHIP	0 5% 1/16W	R152	1-216-835-11	METAL CHIP	15K 5% 1/16W
R046	1-216-864-11	METAL CHIP	0 5% 1/16W	R154	1-216-809-11	METAL CHIP	100 5% 1/16W
R047	1-216-864-11	METAL CHIP	0 5% 1/16W	R155	1-216-809-11	METAL CHIP	100 5% 1/16W
R048	1-414-385-11	INDUCTOR	0UH	R156	1-216-809-11	METAL CHIP	100 5% 1/16W
R049	1-414-385-11	INDUCTOR	0UH	R157	1-216-864-11	METAL CHIP	0 5% 1/16W
R050	1-414-385-11	INDUCTOR	0UH	R159	1-216-805-11	METAL CHIP	47 5% 1/16W
R052	1-414-385-11	INDUCTOR	0UH	R160	1-216-821-11	METAL CHIP	1K 5% 1/16W
R053	1-414-385-11	INDUCTOR	0UH	R161	1-216-821-11	METAL CHIP	1K 5% 1/16W
R054	1-414-385-11	INDUCTOR	0UH	R162	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
R055	1-414-385-11	INDUCTOR	0UH	R163	1-216-864-11	METAL CHIP	0 5% 1/16W
R056	1-414-385-11	INDUCTOR	0UH	R164	1-216-816-11	METAL CHIP	390 5% 1/16W
R057	1-414-385-11	INDUCTOR	0UH	R165	1-216-864-11	METAL CHIP	0 5% 1/16W
R059	1-216-837-11	METAL CHIP	22K 5% 1/16W	R166	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R060	1-216-818-11	METAL CHIP	560 5% 1/16W	R167	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
R061	1-216-817-11	METAL CHIP	470 5% 1/16W	R168	1-216-835-11	METAL CHIP	15K 5% 1/16W
R062	1-216-821-11	METAL CHIP	1K 5% 1/16W	R169	1-216-832-11	METAL CHIP	8.2K 5% 1/16W
R063	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R170	1-216-864-11	METAL CHIP	0 5% 1/16W
R064	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R173	1-216-821-11	METAL CHIP	1K 5% 1/16W
R065	1-216-837-11	METAL CHIP	22K 5% 1/16W	R174	1-216-821-11	METAL CHIP	1K 5% 1/16W
R067	1-216-818-11	METAL CHIP	560 5% 1/16W	R175	1-216-813-11	METAL CHIP	220 5% 1/16W
R068	1-216-817-11	METAL CHIP	470 5% 1/16W	R176	1-216-821-11	METAL CHIP	1K 5% 1/16W
R069	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R177	1-216-821-11	METAL CHIP	1K 5% 1/16W
R070	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R178	1-216-817-11	METAL CHIP	470 5% 1/16W
R071	1-216-821-11	METAL CHIP	1K 5% 1/16W	R182	1-216-821-11	METAL CHIP	1K 5% 1/16W
R113	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R183	1-216-821-11	METAL CHIP	1K 5% 1/16W
R115	1-216-837-11	METAL CHIP	22K 5% 1/16W	R184	1-216-817-11	METAL CHIP	470 5% 1/16W
R116	1-216-837-11	METAL CHIP	22K 5% 1/16W	R185	1-216-821-11	METAL CHIP	1K 5% 1/16W
R117	1-216-837-11	METAL CHIP	22K 5% 1/16W	R186	1-216-821-11	METAL CHIP	1K 5% 1/16W
R118	1-216-821-11	METAL CHIP	1K 5% 1/16W	R187	1-216-817-11	METAL CHIP	470 5% 1/16W
R119	1-216-821-11	METAL CHIP	1K 5% 1/16W	R192	1-216-821-11	METAL CHIP	1K 5% 1/16W
R120	1-216-821-11	METAL CHIP	1K 5% 1/16W	R199	1-216-821-11	METAL CHIP	1K 5% 1/16W
R121	1-216-864-11	METAL CHIP	0 5% 1/16W	R201	1-216-821-11	METAL CHIP	1K 5% 1/16W
R122	1-216-864-11	METAL CHIP	0 5% 1/16W	R203	1-216-864-11	METAL CHIP	0 5% 1/16W
R123	1-216-864-11	METAL CHIP	0 5% 1/16W	R204	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R124	1-216-833-11	METAL CHIP	10K 5% 1/16W	R205	1-216-864-11	METAL CHIP	0 5% 1/16W
R125	1-216-833-11	METAL CHIP	10K 5% 1/16W	R206	1-216-864-11	METAL CHIP	0 5% 1/16W
R126	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R207	1-216-864-11	METAL CHIP	0 5% 1/16W
R127	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	R208	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R128	1-216-809-11	METAL CHIP	100 5% 1/16W	R209	1-216-864-11	METAL CHIP	0 5% 1/16W
R129	1-216-809-11	METAL CHIP	100 5% 1/16W	R210	1-216-864-11	METAL CHIP	0 5% 1/16W
R130	1-216-809-11	METAL CHIP	100 5% 1/16W	R211	1-216-833-11	METAL CHIP	10K 5% 1/16W
R131	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R212	1-216-864-11	METAL CHIP	0 5% 1/16W
R133	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R213	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R134	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R214	1-216-833-11	METAL CHIP	10K 5% 1/16W
R135	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R215	1-216-840-11	METAL CHIP	39K 5% 1/16W

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R216	1-216-864-11	METAL CHIP	0	5%	1/16W	R422	1-216-805-11	METAL CHIP	47	5%	1/16W
R217	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R423	1-216-805-11	METAL CHIP	47	5%	1/16W
R218	1-216-864-11	METAL CHIP	0	5%	1/16W	R424	1-216-805-11	METAL CHIP	47	5%	1/16W
R219	1-216-864-11	METAL CHIP	0	5%	1/16W	R425	1-216-833-11	METAL CHIP	10K	5%	1/16W
R246	1-216-864-11	METAL CHIP	0	5%	1/16W	R426	1-216-821-11	METAL CHIP	1K	5%	1/16W
R247	1-216-821-11	METAL CHIP	1K	5%	1/16W	R427	1-216-833-11	METAL CHIP	10K	5%	1/16W
R248	1-216-817-11	METAL CHIP	470	5%	1/16W	R428	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R249	1-216-817-11	METAL CHIP	470	5%	1/16W	R429	1-216-845-11	METAL CHIP	100K	5%	1/16W
R250	1-216-821-11	METAL CHIP	1K	5%	1/16W	R430	1-216-805-11	METAL CHIP	47	5%	1/16W
R256	1-216-833-11	METAL CHIP	10K	5%	1/16W	R431	1-216-817-11	METAL CHIP	470	5%	1/16W
R257	1-216-864-11	METAL CHIP	0	5%	1/16W	R432	1-216-845-11	METAL CHIP	100K	5%	1/16W
R259	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R433	1-216-845-11	METAL CHIP	100K	5%	1/16W
R260	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R434	1-216-805-11	METAL CHIP	47	5%	1/16W
R261	1-216-814-11	METAL CHIP	270	5%	1/16W	R435	1-216-845-11	METAL CHIP	100K	5%	1/16W
R262	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R437	1-216-864-11	METAL CHIP	0	5%	1/16W
R264	1-216-833-11	METAL CHIP	10K	5%	1/16W	R438	1-216-864-11	METAL CHIP	0	5%	1/16W
R266	1-216-833-11	METAL CHIP	10K	5%	1/16W	R439	1-216-864-11	METAL CHIP	0	5%	1/16W
R268	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R440	1-216-833-11	METAL CHIP	10K	5%	1/16W
R269	1-216-814-11	METAL CHIP	270	5%	1/16W	R441	1-216-833-11	METAL CHIP	10K	5%	1/16W
R270	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R442	1-216-815-11	METAL CHIP	330	5%	1/16W
R271	1-216-864-11	METAL CHIP	0	5%	1/16W	R443	1-216-805-11	METAL CHIP	47	5%	1/16W
R272	1-216-855-11	METAL CHIP	680K	5%	1/16W	R444	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R273	1-216-839-11	METAL CHIP	33K	5%	1/16W	R445	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R274	1-216-864-11	METAL CHIP	0	5%	1/16W	R446	1-216-845-11	METAL CHIP	100K	5%	1/16W
R276	1-216-833-11	METAL CHIP	10K	5%	1/16W	R447	1-216-845-11	METAL CHIP	100K	5%	1/16W
R277	1-216-839-11	METAL CHIP	33K	5%	1/16W	R448	1-216-845-11	METAL CHIP	100K	5%	1/16W
R278	1-216-864-11	METAL CHIP	0	5%	1/16W	R449	1-216-821-11	METAL CHIP	1K	5%	1/16W
R279	1-216-839-11	METAL CHIP	33K	5%	1/16W	R450	1-216-857-11	METAL CHIP	1M	5%	1/16W
R280	1-216-833-11	METAL CHIP	10K	5%	1/16W	R451	1-216-845-11	METAL CHIP	100K	5%	1/16W
R281	1-216-821-11	METAL CHIP	1K	5%	1/16W	R452	1-216-845-11	METAL CHIP	100K	5%	1/16W
R282	1-216-839-11	METAL CHIP	33K	5%	1/16W	R453	1-216-845-11	METAL CHIP	100K	5%	1/16W
R285	1-216-864-11	METAL CHIP	0	5%	1/16W	R454	1-216-845-11	METAL CHIP	100K	5%	1/16W
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W	R455	1-216-845-11	METAL CHIP	100K	5%	1/16W
R288	1-216-833-11	METAL CHIP	10K	5%	1/16W	R456	1-216-845-11	METAL CHIP	100K	5%	1/16W
R292	1-216-833-11	METAL CHIP	10K	5%	1/16W	R457	1-216-845-11	METAL CHIP	100K	5%	1/16W
R295	1-216-864-11	METAL CHIP	0	5%	1/16W	R458	1-216-845-11	METAL CHIP	100K	5%	1/16W
R297	1-216-864-11	METAL CHIP	0	5%	1/16W	R459	1-216-845-11	METAL CHIP	100K	5%	1/16W
R298	1-216-864-11	METAL CHIP	0	5%	1/16W	R460	1-216-845-11	METAL CHIP	100K	5%	1/16W
R299	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R461	1-216-864-11	METAL CHIP	0	5%	1/16W
R300	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R462	1-216-864-11	METAL CHIP	0	5%	1/16W
R301	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R463	1-216-864-11	METAL CHIP	0	5%	1/16W
R302	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R464	1-216-864-11	METAL CHIP	0	5%	1/16W
R303	1-216-821-11	METAL CHIP	1K	5%	1/16W	R465	1-216-864-11	METAL CHIP	0	5%	1/16W
R304	1-216-815-11	METAL CHIP	330	5%	1/16W	R466	1-216-864-11	METAL CHIP	0	5%	1/16W
R313	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R467	1-216-864-11	METAL CHIP	0	5%	1/16W
R314	1-216-815-11	METAL CHIP	330	5%	1/16W	R468	1-216-864-11	METAL CHIP	0	5%	1/16W
R315	1-216-815-11	METAL CHIP	330	5%	1/16W	R469	1-216-821-11	METAL CHIP	1K	5%	1/16W
R318	1-216-295-91	SHORT	0			R470	1-216-821-11	METAL CHIP	1K	5%	1/16W
R319	1-218-865-11	RES, CHIP	5.6K	0.50%	1/16W	R471	1-216-821-11	METAL CHIP	1K	5%	1/16W
R320	1-218-831-11	RES, CHIP	220	0.50%	1/16W	R472	1-216-821-11	METAL CHIP	1K	5%	1/16W
R321	1-218-851-11	RES, CHIP	1.5K	0.50%	1/16W	R502	1-216-809-11	METAL CHIP	100	5%	1/16W
R322	1-218-831-11	RES, CHIP	220	0.50%	1/16W	R503	1-216-809-11	METAL CHIP	100	5%	1/16W
R340	1-216-841-11	METAL CHIP	47K	5%	1/16W	R504	1-216-864-11	METAL CHIP	0	5%	1/16W
R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	R505	1-216-809-11	METAL CHIP	100	5%	1/16W
R342	1-216-864-11	METAL CHIP	0	5%	1/16W	R506	1-216-864-11	METAL CHIP	0	5%	1/16W
R343	1-216-840-11	METAL CHIP	39K	5%	1/16W	R507	1-216-809-11	METAL CHIP	100	5%	1/16W
R344	1-216-821-11	METAL CHIP	1K	5%	1/16W	R508	1-216-864-11	METAL CHIP	0	5%	1/16W
R345	1-216-821-11	METAL CHIP	1K	5%	1/16W	R509	1-216-833-11	METAL CHIP	10K	5%	1/16W
R346	1-216-833-11	METAL CHIP	10K	5%	1/16W	R510	1-216-864-11	METAL CHIP	0	5%	1/16W
R401	1-216-821-11	METAL CHIP	1K	5%	1/16W	R511	1-216-833-11	METAL CHIP	10K	5%	1/16W

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Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R512	1-216-809-11	METAL CHIP	100	5%	1/16W	R582	1-216-841-11	METAL CHIP	47K	5%	1/16W
R513	1-216-809-11	METAL CHIP	100	5%	1/16W	R583	1-216-841-11	METAL CHIP	47K	5%	1/16W
R514	1-216-809-11	METAL CHIP	100	5%	1/16W	R584	1-216-841-11	METAL CHIP	47K	5%	1/16W
R515	1-216-809-11	METAL CHIP	100	5%	1/16W	R585	1-216-841-11	METAL CHIP	47K	5%	1/16W
R517	1-216-809-11	METAL CHIP	100	5%	1/16W	R586	1-216-837-11	METAL CHIP	22K	5%	1/16W
R518	1-216-809-11	METAL CHIP	100	5%	1/16W	R587	1-216-837-11	METAL CHIP	22K	5%	1/16W
R524	1-216-841-11	METAL CHIP	47K	5%	1/16W	R701	1-216-833-11	METAL CHIP	10K	5%	1/16W
R526	1-216-841-11	METAL CHIP	47K	5%	1/16W	R702	1-216-821-11	METAL CHIP	1K	5%	1/16W
R529	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R703	1-216-857-11	METAL CHIP	1M	5%	1/16W
R530	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R704	1-216-833-11	METAL CHIP	10K	5%	1/16W
R531	1-216-809-11	METAL CHIP	100	5%	1/16W	R705	1-216-833-11	METAL CHIP	10K	5%	1/16W
R532	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R706	1-216-821-11	METAL CHIP	1K	5%	1/16W
R533	1-216-809-11	METAL CHIP	100	5%	1/16W	R707	1-216-845-11	METAL CHIP	100K	5%	1/16W
R534	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R708	1-216-864-11	METAL CHIP	0	5%	1/16W
R535	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	R709	1-216-845-11	METAL CHIP	100K	5%	1/16W
R536	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R710	1-216-845-11	METAL CHIP	100K	5%	1/16W
R537	1-216-841-11	METAL CHIP	47K	5%	1/16W	R711	1-216-833-11	METAL CHIP	10K	5%	1/16W
R538	1-216-841-11	METAL CHIP	47K	5%	1/16W	R712	1-216-833-11	METAL CHIP	10K	5%	1/16W
R539	1-216-841-11	METAL CHIP	47K	5%	1/16W	R713	1-216-845-11	METAL CHIP	100K	5%	1/16W
R540	1-216-841-11	METAL CHIP	47K	5%	1/16W	R714	1-216-833-11	METAL CHIP	10K	5%	1/16W
R541	1-216-841-11	METAL CHIP	47K	5%	1/16W	R715	1-216-845-11	METAL CHIP	100K	5%	1/16W
R542	1-216-841-11	METAL CHIP	47K	5%	1/16W	R717	1-218-873-11	RES, CHIP	12K	0.50%	1/16W
R543	1-216-821-11	METAL CHIP	1K	5%	1/16W	R718	1-218-873-11	RES, CHIP	12K	0.50%	1/16W
R544	1-216-821-11	METAL CHIP	1K	5%	1/16W	R719	1-216-864-11	METAL CHIP	0	5%	1/16W
R545	1-216-821-11	METAL CHIP	1K	5%	1/16W	R720	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R546	1-216-791-11	METAL CHIP	3.3	5%	1/16W	R721	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R547	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R722	1-216-806-11	RES, CHIP	56	5%	1/16W
R548	1-216-821-11	METAL CHIP	1K	5%	1/16W	R723	1-216-806-11	RES, CHIP	56	5%	1/16W
R549	1-216-821-11	METAL CHIP	1K	5%	1/16W	R724	1-216-806-11	RES, CHIP	56	5%	1/16W
R550	1-216-841-11	METAL CHIP	47K	5%	1/16W	R725	1-216-806-11	RES, CHIP	56	5%	1/16W
R551	1-216-821-11	METAL CHIP	1K	5%	1/16W	R726	1-216-845-11	METAL CHIP	100K	5%	1/16W
R553	1-216-797-11	METAL CHIP	10	5%	1/16W	R727	1-216-864-11	METAL CHIP	0	5%	1/16W
R554	1-216-797-11	METAL CHIP	10	5%	1/16W	R801	1-216-833-11	METAL CHIP	10K	5%	1/16W
R555	1-216-833-11	METAL CHIP	10K	5%	1/16W	R802	1-216-845-11	METAL CHIP	100K	5%	1/16W
R556	1-216-833-11	METAL CHIP	10K	5%	1/16W	R803	1-216-809-11	METAL CHIP	100	5%	1/16W
R557	1-216-833-11	METAL CHIP	10K	5%	1/16W	R813	1-216-837-11	METAL CHIP	22K	5%	1/16W
R558	1-216-821-11	METAL CHIP	1K	5%	1/16W	R814	1-216-142-00	RES, CHIP	4.7	5%	1/8W
R559	1-216-821-11	METAL CHIP	1K	5%	1/16W	R818	1-216-845-11	METAL CHIP	100K	5%	1/16W
R560	1-216-821-11	METAL CHIP	1K	5%	1/16W	R819	1-216-837-11	METAL CHIP	22K	5%	1/16W
R561	1-216-821-11	METAL CHIP	1K	5%	1/16W	R821	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R562	1-216-821-11	METAL CHIP	1K	5%	1/16W	R822	1-216-845-11	METAL CHIP	100K	5%	1/16W
R563	1-216-821-11	METAL CHIP	1K	5%	1/16W	R823	1-216-845-11	METAL CHIP	100K	5%	1/16W
R564	1-219-570-11	RES, CHIP	10M	5%	1/16W	R824	1-216-845-11	METAL CHIP	100K	5%	1/16W
R565	1-216-864-11	METAL CHIP	0	5%	1/16W	R826	1-216-864-11	METAL CHIP	0	5%	1/16W
R566	1-216-821-11	METAL CHIP	1K	5%	1/16W	R829	1-216-864-11	METAL CHIP	0	5%	1/16W
R567	1-216-821-11	METAL CHIP	1K	5%	1/16W	R830	1-216-833-11	METAL CHIP	10K	5%	1/16W
R568	1-216-821-11	METAL CHIP	1K	5%	1/16W	R831	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R569	1-216-821-11	METAL CHIP	1K	5%	1/16W	R832	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R570	1-216-841-11	METAL CHIP	47K	5%	1/16W	R833	1-216-833-11	METAL CHIP	10K	5%	1/16W
R571	1-216-841-11	METAL CHIP	47K	5%	1/16W	R834	1-216-833-11	METAL CHIP	10K	5%	1/16W
R572	1-216-845-11	METAL CHIP	100K	5%	1/16W	R835	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R573	1-216-821-11	METAL CHIP	1K	5%	1/16W	R836	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R574	1-216-797-11	METAL CHIP	10	5%	1/16W	R837	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R575	1-216-821-11	METAL CHIP	1K	5%	1/16W	R838	1-216-809-11	METAL CHIP	100	5%	1/16W
R576	1-216-797-11	METAL CHIP	10	5%	1/16W	R839	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R577	1-216-797-11	METAL CHIP	10	5%	1/16W	R840	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R578	1-216-821-11	METAL CHIP	1K	5%	1/16W	R841	1-216-809-11	METAL CHIP	100	5%	1/16W
R579	1-216-841-11	METAL CHIP	47K	5%	1/16W	R842	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R580	1-216-833-11	METAL CHIP	10K	5%	1/16W	R843	1-216-809-11	METAL CHIP	100	5%	1/16W
R581	1-216-841-11	METAL CHIP	47K	5%	1/16W	R844	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R845	1-216-809-11	METAL CHIP	100	5%	1/16W	R939	1-216-833-11	METAL CHIP	10K	5%	1/16W
R847	1-216-833-11	METAL CHIP	10K	5%	1/16W	R941	1-216-864-11	METAL CHIP	0	5%	1/16W
R850	1-218-870-11	RES, CHIP	9.1K	0.50%	1/16W	R943	1-216-864-11	METAL CHIP	0	5%	1/16W
R852	1-216-809-11	METAL CHIP	100	5%	1/16W	R944	1-216-833-11	METAL CHIP	10K	5%	1/16W
R853	1-216-833-11	METAL CHIP	10K	5%	1/16W	R950	1-216-821-11	METAL CHIP	1K	5%	1/16W
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W	R951	1-216-821-11	METAL CHIP	1K	5%	1/16W
R855	1-218-870-11	RES, CHIP	9.1K	0.50%	1/16W	R952	1-216-821-11	METAL CHIP	1K	5%	1/16W
R856	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R953	1-216-821-11	METAL CHIP	1K	5%	1/16W
R857	1-216-809-11	METAL CHIP	100	5%	1/16W	R954	1-216-821-11	METAL CHIP	1K	5%	1/16W
R858	1-218-707-11	RES, CHIP	4.3K	5%	1/16W	R955	1-216-821-11	METAL CHIP	1K	5%	1/16W
R859	1-216-809-11	METAL CHIP	100	5%	1/16W	R956	1-216-821-11	METAL CHIP	1K	5%	1/16W
R860	1-218-707-11	RES, CHIP	4.3K	5%	1/16W	R957	1-216-842-11	METAL CHIP	56K	5%	1/16W
R861	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R958	1-216-845-11	METAL CHIP	100K	5%	1/16W
R863	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R959	1-216-833-11	METAL CHIP	10K	5%	1/16W
R866	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R960	1-216-841-11	METAL CHIP	47K	5%	1/16W
R867	1-216-809-11	METAL CHIP	100	5%	1/16W	R962	1-216-821-11	METAL CHIP	1K	5%	1/16W
R868	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R964	1-216-838-11	METAL CHIP	27K	5%	1/16W
R869	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R965	1-216-833-11	METAL CHIP	10K	5%	1/16W
R870	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R966	1-216-833-11	METAL CHIP	10K	5%	1/16W
R871	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R967	1-216-833-11	METAL CHIP	10K	5%	1/16W
R872	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R968	1-216-841-11	METAL CHIP	47K	5%	1/16W
R873	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R969	1-216-841-11	METAL CHIP	47K	5%	1/16W
R875	1-218-839-11	RES, CHIP	470	0.50%	1/16W	R970	1-216-833-11	METAL CHIP	10K	5%	1/16W
R876	1-218-839-11	RES, CHIP	470	0.50%	1/16W	R971	1-216-813-11	METAL CHIP	220	5%	1/16W
R877	1-218-839-11	RES, CHIP	470	0.50%	1/16W	R972	1-216-841-11	METAL CHIP	47K	5%	1/16W
R878	1-218-839-11	RES, CHIP	470	0.50%	1/16W	R973	1-216-864-11	METAL CHIP	0	5%	1/16W
R879	1-216-864-11	METAL CHIP	0	5%	1/16W	R974	1-216-838-11	METAL CHIP	27K	5%	1/16W
R880	1-216-815-11	METAL CHIP	330	5%	1/16W	R975	1-216-841-11	METAL CHIP	47K	5%	1/16W
R881	1-216-815-11	METAL CHIP	330	5%	1/16W	R976	1-216-845-11	METAL CHIP	100K	5%	1/16W
R885	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R978	1-216-813-11	METAL CHIP	220	5%	1/16W
R886	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R980	1-216-841-11	METAL CHIP	47K	5%	1/16W
R887	1-216-833-11	METAL CHIP	10K	5%	1/16W	R981	1-216-821-11	METAL CHIP	1K	5%	1/16W
R888	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R982	1-216-833-11	METAL CHIP	10K	5%	1/16W
R889	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	R983	1-216-821-11	METAL CHIP	1K	5%	1/16W
R890	1-216-849-11	METAL CHIP	220K	5%	1/16W	R984	1-216-833-11	METAL CHIP	10K	5%	1/16W
R891	1-208-813-11	RES, CHIP	20K	0.50%	1/10W	R986	1-216-864-11	METAL CHIP	0	5%	1/16W
R893	1-216-833-11	METAL CHIP	10K	5%	1/16W	R987	1-216-864-11	METAL CHIP	0	5%	1/16W
R894	1-216-809-11	METAL CHIP	100	5%	1/16W	R988	1-216-864-11	METAL CHIP	0	5%	1/16W
R895	1-216-833-11	METAL CHIP	10K	5%	1/16W	R989	1-216-864-11	METAL CHIP	0	5%	1/16W
R896	1-216-809-11	METAL CHIP	100	5%	1/16W	R990	1-216-813-11	METAL CHIP	220	5%	1/16W
R897	1-208-813-11	RES, CHIP	20K	0.50%	1/10W	R991	1-216-813-11	METAL CHIP	220	5%	1/16W
R899	1-216-864-11	METAL CHIP	0	5%	1/16W	R992	1-216-864-11	METAL CHIP	0	5%	1/16W
R903	1-216-864-11	METAL CHIP	0	5%	1/16W	< VARIABLE RESISTOR >					
R904	1-216-838-11	METAL CHIP	27K	5%	1/16W	RV001	1-238-855-11	RES, ADJ, CERMET 4.7K			
R905	1-216-821-11	METAL CHIP	1K	5%	1/16W	RV002	1-238-855-11	RES, ADJ, CERMET 4.7K			
R906	1-218-883-11	RES, CHIP	33K	0.50%	1/16W	RV010	1-238-854-11	RES, ADJ, CERMET 2.2K			
R907	1-216-821-11	METAL CHIP	1K	5%	1/16W	RV011	1-238-853-11	RES, ADJ, CERMET 1K			
R908	1-216-864-11	METAL CHIP	0	5%	1/16W	RV012	1-238-854-11	RES, ADJ, CERMET 2.2K			
R909	1-216-864-11	METAL CHIP	0	5%	1/16W	RV201	1-238-855-11	RES, ADJ, CERMET 4.7K			
R913	1-216-821-11	METAL CHIP	1K	5%	1/16W	RV202	1-238-858-11	RES, ADJ, CERMET 47K			
R918	1-216-821-11	METAL CHIP	1K	5%	1/16W	< VIBRATOR >					
R919	1-216-864-11	METAL CHIP	0	5%	1/16W	X421	1-760-655-21	VIBRATOR, CRYSTAL (20MHz)			
R920	1-218-871-11	RES, CHIP	10K	0.50%	1/16W	X422	1-767-449-11	VIBRATOR, CRYSTAL (27MHz)			
R921	1-218-875-11	RES, CHIP	15K	0.50%	1/16W	X501	1-767-450-11	VIBRATOR, CERAMIC (20MHz)			
R923	1-216-178-00	RES, CHIP	150	5%	1/8W	X502	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)			
R924	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	X701	1-767-399-11	VIBRATOR, CRYSTAL (24.576MHz)			
R926	1-216-857-11	METAL CHIP	1M	5%	1/16W	X702	1-760-497-21	VIBRATOR, LITHIUM NIOBATE (6MHz)			
R936	1-216-845-11	METAL CHIP	100K	5%	1/16W						
R937	1-216-845-11	METAL CHIP	100K	5%	1/16W						
R938	1-216-847-11	METAL CHIP	150K	5%	1/16W						

JC-19

MD-63

MD-64

MD-65

RE-32

Ref. No.	Part No.	Description	Remark
X801	1-767-779-21	VIBRATOR, CRYSTAL (49.152MHz)	

MD-63 BOARD

(Ref No. 6,000 Series)

< CAPACITOR >

C101	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C102	1-163-031-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

CN101	1-770-646-11	CONNECTOR, FFC/FPC 16P
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< DIODE >

D101	8-719-989-52	DIODE GL4600S
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< IC >

IC101	8-719-820-44	IC PHOTO COUPLER TLP907-0 (SONY2)
IC102	8-719-820-44	IC PHOTO COUPLER TLP907-0 (SONY2)
IC103	8-759-510-71	IC BA10358F-E2
IC105	8-719-821-03	IC ELEMENT, HALL THS117-TE85L

< JUMPER RESISTOR >

JR101	1-216-296-91	SHORT	0
JR102	1-216-296-91	SHORT	0
JR103	1-216-296-91	SHORT	0
JR104	1-216-296-91	SHORT	0
JR105	1-216-296-91	SHORT	0

< TRANSISTOR >

Q102	8-729-012-46	PHOTO TRANSISTOR PT4600FS
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< RESISTOR >

R101	1-216-031-00	METAL CHIP	180	5%	1/10W
R102	1-216-081-00	METAL CHIP	22K	5%	1/10W
R103	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R107	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R108	1-216-047-91	RES, CHIP	820	5%	1/10W

R109	1-216-081-00	METAL CHIP	22K	5%	1/10W
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< VARIABLE RESISTOR >

RV101	1-238-858-11	RES, ADJ, CERMET 47K
RV102	1-238-862-11	RES, ADJ, CERMET 1M

< SWITCH >

S101	1-572-719-11	SWITCH, PUSH (1 KEY)
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MD-64 BOARD

(Ref No. 7,000 Series)

< CAPACITOR >

C001	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C002	1-163-031-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

CN002	1-770-692-11	CONNECTOR, FFC/FPC 9P
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Ref. No.	Part No.	Description	Remark
		< IC >	

IC003	8-719-820-44	IC PHOTO COUPLER TLP907-0 (SONY2)
IC004	8-719-820-44	IC PHOTO COUPLER TLP907-0 (SONY2)
IC005	8-759-510-71	IC BA10358F-E2
IC006	8-719-821-03	IC ELEMENT, HALL THS117-TE85L

< JUMPER RESISTOR >

JR001	1-216-296-91	SHORT	0
JR002	1-216-296-91	SHORT	0

< TRANSISTOR >

Q001	8-729-012-46	PHOTO TRANSISTOR PT4600FS
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< RESISTOR >

R002	1-216-031-00	METAL CHIP	180	5%	1/10W
R003	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R004	1-216-081-00	METAL CHIP	22K	5%	1/10W
R005	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R007	1-216-081-00	METAL CHIP	22K	5%	1/10W

R008	1-216-047-91	RES, CHIP	820	5%	1/10W
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< VARIABLE RESISTOR >

RV001	1-238-858-11	RES, ADJ, CERMET 47K
RV002	1-238-862-11	RES, ADJ, CERMET 1M

< SWITCH >

S002	1-762-558-11	SWITCH, PUSH (C DOWN)
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MD-65 BOARD

(Ref No. 5,000 Series)

< CONNECTOR >

CN201	1-766-830-21	CONNECTOR, FFC/FPC (ZIF) 11P
CN202	1-774-771-11	CONNECTOR, FFC/FPC 14P
CN203	1-564-001-11	PIN, CONNECTOR 2P
CN204	1-750-620-11	CONNECTOR (MM8 MD)

< JUMPER RESISTOR >

JR201	1-216-296-91	SHORT	0
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* A-7073-470-A RE-32 BOARD, COMPLETE

(Ref No. 7,000 Series)

< CAPACITOR >

C101	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C102	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C103	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C104	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C105	1-163-243-11	CERAMIC CHIP	47PF	5%	50V

C106	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C108	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C115	1-163-038-91	CERAMIC CHIP	0.1uF		25V

< CONNECTOR >

CN101	1-764-129-11	CONNECTOR, FPC 15P
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Ref. No.	Part No.	Description	Remark
CN102	1-764-129-11	CONNECTOR, FPC 15P	
		< DIODE >	
D101	8-719-421-59	DIODE MA3075WA-(TX)	
D102	8-719-421-59	DIODE MA3075WA-(TX)	
D103	8-719-421-59	DIODE MA3075WA-(TX)	
D104	8-719-421-59	DIODE MA3075WA-(TX)	
D105	8-719-421-59	DIODE MA3075WA-(TX)	
D106	8-719-421-59	DIODE MA3075WA-(TX)	
D107	8-719-421-59	DIODE MA3075WA-(TX)	
D108	8-719-421-59	DIODE MA3075WA-(TX)	
D109	8-719-421-59	DIODE MA3075WA-(TX)	
D110	8-719-421-59	DIODE MA3075WA-(TX)	
D111	8-719-421-59	DIODE MA3075WA-(TX)	
D112	8-719-421-59	DIODE MA3075WA-(TX)	
D113	8-719-421-59	DIODE MA3075WA-(TX)	
D114	8-719-421-59	DIODE MA3075WA-(TX)	
D115	8-719-108-12	DIODE RD9.1EW	
		< FERRITE BEAD >	
FB101	1-500-241-21	FERRITE 0UH	
FB102	1-500-241-21	FERRITE 0UH	
FB103	1-500-241-21	FERRITE 0UH	
FB104	1-500-241-21	FERRITE 0UH	
FB105	1-500-241-21	FERRITE 0UH	
FB106	1-500-241-21	FERRITE 0UH	
		< JACK >	
J101	1-694-410-11	TERMINAL BOARD (INPUT/OUTPUT/MONITOR)	
		< JUMPER RESISTOR >	
JR101	1-216-296-91	SHORT 0	
JR102	1-216-296-91	SHORT 0	
JR103	1-216-296-91	SHORT 0	
JR104	1-216-296-91	SHORT 0	
JR105	1-216-296-91	SHORT 0	
JR106	1-216-296-91	SHORT 0	
JR107	1-216-296-91	SHORT 0	
JR108	1-216-296-91	SHORT 0	
JR109	1-216-296-91	SHORT 0	
JR110	1-216-296-91	SHORT 0	
JR111	1-216-296-91	SHORT 0	
JR112	1-216-296-91	SHORT 0	
JR113	1-216-296-91	SHORT 0	
JR114	1-216-296-91	SHORT 0	
JR115	1-216-296-91	SHORT 0	
JR116	1-216-296-91	SHORT 0	
JR117	1-216-296-91	SHORT 0	
JR118	1-216-296-91	SHORT 0	
JR119	1-216-296-91	SHORT 0	
JR120	1-216-296-91	SHORT 0	
JR121	1-216-296-91	SHORT 0	
JR122	1-216-296-91	SHORT 0	
JR123	1-216-296-91	SHORT 0	
		< RESISTOR >	
R105	1-216-296-91	SHORT 0	
R106	1-216-022-00	METAL CHIP 75 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R107	1-216-022-00	METAL CHIP 75 5% 1/10W	
R108	1-216-022-00	METAL CHIP 75 5% 1/10W	
R109	1-216-295-91	SHORT 0	
R110	1-216-295-91	SHORT 0	
R111	1-216-295-91	SHORT 0	
R112	1-216-295-91	SHORT 0	
R113	1-216-295-91	SHORT 0	
R114	1-216-295-91	SHORT 0	
R115	1-216-295-91	SHORT 0	
		< SWITCH >	
S101	1-570-974-11	SWITCH, SLIDE (SYNC)	
*	A-7067-132-A	RP-228 BOARD, COMPLETE (DSR-20)	
*	A-7067-128-A	RP-228 BOARD, COMPLETE (DSR-20P)	

		(Ref No. 3,000 Series)	
	1-776-149-11	CABLE, FLEXIBLE FLAT 30P	
	1-783-376-11	CABLE, FLEXIBLE FLAT (FFC-245)	
		< CAPACITOR >	
C146	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C148	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C701	1-164-174-11	CERAMIC CHIP 0.0082uF 10% 25V	
C702	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C703	1-164-174-11	CERAMIC CHIP 0.0082uF 10% 25V	
C704	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C705	1-164-173-11	CERAMIC CHIP 0.0039uF 10% 50V	
C706	1-164-173-11	CERAMIC CHIP 0.0039uF 10% 50V	
C761	1-164-360-11	CERAMIC CHIP 0.1uF 10% 16V	
C762	1-164-360-11	CERAMIC CHIP 0.1uF 10% 16V	
C763	1-164-360-11	CERAMIC CHIP 0.1uF 10% 16V	
C770	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C771	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C772	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C773	1-113-619-11	CERAMIC CHIP 0.47uF 10V	
C774	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C775	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C776	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C777	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C778	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C779	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C780	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C781	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C782	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C783	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C784	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C786	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C788	1-104-851-11	TANTAL. CHIP 10uF 20% 10V	
C789	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C791	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C792	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C793	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C794	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C795	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C796	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C797	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C798	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

RP-228

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C799	1-164-217-11	CERAMIC CHIP 150PF 5%	50V	D791	8-719-404-49	DIODE MA111	
C803	1-164-217-11	CERAMIC CHIP 150PF 5%	50V			< FILTER >	
C811	1-113-619-11	CERAMIC CHIP 0.47uF	10V	FL770	1-411-951-21	DELAY LINE, LC (23NS)	
C813	1-162-974-11	CERAMIC CHIP 0.01uF	50V	FL771	1-233-734-21	FILTER, LOW PASS	
C814	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V			< IC >	
C815	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	IC770	8-759-445-93	IC AK6440AM-E2	
C816	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	IC771	8-759-426-25	IC MB88346LPFV-G-BND-ER	
C817	1-104-851-11	TANTAL. CHIP 10uF 20%	10V	IC772	8-752-371-18	IC CXD2302Q-T4	
C818	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	IC773	8-752-070-12	IC CXA1762Q-T4	
C819	1-162-974-11	CERAMIC CHIP 0.01uF	50V	IC774	8-752-386-38	IC CXD3105R-T6	
C821	1-164-360-11	CERAMIC CHIP 0.1uF	16V	IC775	8-752-074-59	IC CXA2023R-T4	
C822	1-164-360-11	CERAMIC CHIP 0.1uF	16V	IC777	8-752-073-50	IC CXA2018Q-T4	
C823	1-164-360-11	CERAMIC CHIP 0.1uF	16V	IC791	8-759-426-83	IC TK11228BMCL	
C824	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V			< COIL >	
C825	1-164-315-11	CERAMIC CHIP 470PF 5%	50V	L105	1-414-398-11	INDUCTOR 10uH	
C826	1-162-974-11	CERAMIC CHIP 0.01uF	50V	L770	1-414-398-11	INDUCTOR 10uH	
C827	1-162-974-11	CERAMIC CHIP 0.01uF	50V	L773	1-414-398-11	INDUCTOR 10uH	
C828	1-162-974-11	CERAMIC CHIP 0.01uF	50V	L774	1-414-398-11	INDUCTOR 10uH	
C829	1-135-201-11	TANTALUM CHIP 10uF 20%	4V	L776	1-414-398-11	INDUCTOR 10uH	
C830	1-164-360-11	CERAMIC CHIP 0.1uF	16V	L779	1-410-737-31	INDUCTOR CHIP 0.47uH	
C831	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	L781	1-412-963-11	INDUCTOR 100uH	
C832	1-164-360-11	CERAMIC CHIP 0.1uF	16V	L782	1-412-963-11	INDUCTOR 100uH	
C833	1-162-974-11	CERAMIC CHIP 0.01uF	50V	L783	1-414-398-11	INDUCTOR 10uH	
C834	1-162-974-11	CERAMIC CHIP 0.01uF	50V	L784	1-414-398-11	INDUCTOR 10uH	
C835	1-162-974-11	CERAMIC CHIP 0.01uF	50V	L789	1-414-398-11	INDUCTOR 10uH	
C836	1-162-974-11	CERAMIC CHIP 0.01uF	50V			< TRANSISTOR >	
C837	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	Q105	8-729-037-52	TRANSISTOR 2SD2216J-QR (TX).SO	
C838	1-162-913-11	CERAMIC CHIP 8PF 0.5PF	50V	Q109	8-729-037-52	TRANSISTOR 2SD2216J-QR (TX).SO	
C839	1-162-913-11	CERAMIC CHIP 8PF 0.5PF	50V	Q701	8-729-013-04	TRANSISTOR 2SC4851-TL	
C841	1-162-923-11	CERAMIC CHIP 47PF 5%	50V	Q702	8-729-013-04	TRANSISTOR 2SC4851-TL	
C842	1-164-360-11	CERAMIC CHIP 0.1uF	16V	Q772	8-729-037-72	TRANSISTOR UN9211J-(TX).SO	
C843	1-164-677-11	CERAMIC CHIP 0.033uF 10%	16V	Q773	8-729-141-48	TRANSISTOR 2SB624-T1BV4	
C844	1-164-677-11	CERAMIC CHIP 0.033uF 10%	16V	Q774	8-729-141-48	TRANSISTOR 2SB624-T1BV4	
C845	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	Q775	8-729-037-72	TRANSISTOR UN9211J-(TX).SO	
C847	1-162-974-11	CERAMIC CHIP 0.01uF	50V	Q776	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
C848	1-104-851-11	TANTAL. CHIP 10uF 20%	10V	Q777	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
C850	1-162-974-11	CERAMIC CHIP 0.01uF	50V	Q778	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
C853	1-162-974-11	CERAMIC CHIP 0.01uF	50V	Q779	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
C854	1-104-851-11	TANTAL. CHIP 10uF 20%	10V	Q784	8-729-037-53	TRANSISTOR 2SB1462J-QR(TX).SO	
C855	1-104-851-11	TANTAL. CHIP 10uF 20%	10V			< RESISTOR >	
C857	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R117	1-216-807-11	METAL CHIP 68 5%	1/16W
C859	1-162-974-11	CERAMIC CHIP 0.01uF	50V	R118	1-216-833-11	METAL CHIP 10K 5%	1/16W
C861	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	R120	1-216-864-11	METAL CHIP 0 5%	1/16W
C862	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	R121	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
C874	1-162-974-11	CERAMIC CHIP 0.01uF	50V	R122	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
C875	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	R137	1-216-807-11	METAL CHIP 68 5%	1/16W
		< CONNECTOR >		R138	1-216-833-11	METAL CHIP 10K 5%	1/16W
CN101	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P		R143	1-216-833-11	METAL CHIP 10K 5%	1/16W
CN102	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P		R144	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
CN103	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P		R147	1-216-864-11	METAL CHIP 0 5%	1/16W
CN771	1-770-305-11	CONNECTOR, FFC/FPC 10P		R206	1-216-821-11	METAL CHIP 1K 5%	1/16W
CN775	1-750-303-41	CONNECTOR, BOARD TO BOARD 20P		R308	1-216-821-11	METAL CHIP 1K 5%	1/16W
		< DIODE >		R309	1-216-821-11	METAL CHIP 1K 5%	1/16W
D771	8-719-404-49	DIODE MA111-TX		R310	1-216-821-11	METAL CHIP 1K 5%	1/16W
D772	8-719-404-49	DIODE MA111-TX		R311	1-216-821-11	METAL CHIP 1K 5%	1/16W
D773	8-719-055-86	DIODE KV1470TL1-3					
D774	8-719-052-27	DIODE 1SS351-TB					
D775	8-719-052-27	DIODE 1SS351-TB					

RP-228
RS-78
POWER BLOCK (U1)

Ref. No.	Part No.	Description	Remark
R312	1-216-821-11	METAL CHIP 1K 5%	1/16W
R313	1-216-821-11	METAL CHIP 1K 5%	1/16W
R314	1-216-821-11	METAL CHIP 1K 5%	1/16W
R315	1-216-864-11	METAL CHIP 0 5%	1/16W
R316	1-216-833-11	METAL CHIP 10K 5%	1/16W
R701	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R702	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R703	1-216-809-11	METAL CHIP 100 5%	1/16W
R704	1-216-810-11	METAL CHIP 120 5%	1/16W
R705	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R706	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R707	1-216-809-11	METAL CHIP 100 5%	1/16W
R708	1-216-810-11	METAL CHIP 120 5%	1/16W
R770	1-216-845-11	METAL CHIP 100K 5%	1/16W
R772	1-216-296-91	SHORT 0	
R774	1-216-841-11	METAL CHIP 47K 5%	1/16W
R776	1-216-818-11	METAL CHIP 560 5%	1/16W
R779	1-216-847-11	METAL CHIP 150K 5%	1/16W
R780	1-216-837-11	METAL CHIP 22K 5%	1/16W
R782	1-216-833-11	METAL CHIP 10K 5%	1/16W
R783	1-216-833-11	METAL CHIP 10K 5%	1/16W
R786	1-216-817-11	METAL CHIP 470 5%	1/16W
R787	1-202-924-11	RES, CHIP 240 5%	1/16W
R788	1-202-924-11	RES, CHIP 240 5%	1/16W
R789	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
R790	1-216-841-11	METAL CHIP 47K 5%	1/16W
R791	1-216-815-11	METAL CHIP 330 5%	1/16W
R792	1-216-814-11	METAL CHIP 270 5%	1/16W
R793	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R794	1-216-816-11	METAL CHIP 390 5%	1/16W
R796	1-216-809-11	METAL CHIP 100 5%	1/16W
R797	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R798	1-216-815-11	METAL CHIP 330 5%	1/16W
R799	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R800	1-216-833-11	METAL CHIP 10K 5%	1/16W
R801	1-216-833-11	METAL CHIP 10K 5%	1/16W
R802	1-216-841-11	METAL CHIP 47K 5%	1/16W
R804	1-216-839-11	METAL CHIP 33K 5%	1/16W
R806	1-216-821-11	METAL CHIP 1K 5%	1/16W
R808	1-216-821-11	METAL CHIP 1K 5%	1/16W
R810	1-216-837-11	METAL CHIP 22K 5%	1/16W
R812	1-216-837-11	METAL CHIP 22K 5%	1/16W
R814	1-216-853-11	METAL CHIP 470K 5%	1/16W
R815	1-216-853-11	METAL CHIP 470K 5%	1/16W
R818	1-216-837-11	METAL CHIP 22K 5%	1/16W
R819	1-216-839-11	METAL CHIP 33K 5%	1/16W
R820	1-216-803-11	METAL CHIP 33 5%	1/16W
R822	1-216-834-11	METAL CHIP 12K 5%	1/16W
R824	1-216-821-11	METAL CHIP 1K 5%	1/16W
R825	1-216-841-11	METAL CHIP 47K 5%	1/16W
R826	1-216-839-11	METAL CHIP 33K 5%	1/16W
R827	1-216-821-11	METAL CHIP 1K 5%	1/16W
R830	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R832	1-216-807-11	METAL CHIP 68 5%	1/16W
R843	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R844	1-216-837-11	METAL CHIP 22K 5%	1/16W
R849	1-218-837-11	RES, CHIP 390 0.50%	1/16W

Ref. No.	Part No.	Description	Remark
R850	1-218-835-11	RES, CHIP 330 0.50%	1/16W
R851	1-218-835-11	RES, CHIP 330 0.50%	1/16W
R852	1-218-837-11	RES, CHIP 390 0.50%	1/16W
R858	1-216-816-11	METAL CHIP 390 5%	1/16W

*	A-7073-472-A	RS-78 BOARD, COMPLETE	(Ref No. 6,000 Series)
< CAPACITOR >			
C001	1-164-346-11	CERAMIC CHIP 1uF	16V
C002	1-164-346-11	CERAMIC CHIP 1uF	16V
C003	1-164-346-11	CERAMIC CHIP 1uF	16V
C004	1-164-346-11	CERAMIC CHIP 1uF	16V
C005	1-164-346-11	CERAMIC CHIP 1uF	16V
C006	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C007	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
< CONNECTOR >			
CN001	1-770-693-11	CONNECTOR, FFC/FPC 10P	
CN002	1-565-388-21	CONNECTOR, D-SUB 9P (REMOTE RS-232C)	
< DIODE >			
D001	8-719-062-19	DIODE MA3200WA-TX	
D002	8-719-062-19	DIODE MA3200WA-TX	
D003	8-719-062-19	DIODE MA3200WA-TX	
D004	8-719-062-19	DIODE MA3200WA-TX	
D005	8-719-062-19	DIODE MA3200WA-TX	
< FERRITE BEAD >			
FB001	1-500-241-21	FERRITE 0UH	
FB002	1-500-241-21	FERRITE 0UH	
FB003	1-500-241-21	FERRITE 0UH	
FB004	1-500-241-21	FERRITE 0UH	
FB005	1-500-241-21	FERRITE 0UH	
< IC >			
IC002	8-759-521-15	IC MAX232CWE-TE-2	
< COIL >			
L001	1-412-029-11	INDUCTOR CHIP 10uH	

△	1-468-290-11	POWER BLOCK (U-1) (DSR-20)	
△	1-468-291-11	POWER BLOCK (U-1) (DSR-20P)	

(Ref No. 10,000 Series)			
< CAPACITOR >			
△C1	1-104-705-11	FILM 0.1uF 20%	250V (DSR-20)
△C1	1-104-706-11	FILM 0.22uF 20%	250V (DSR-20P)
△C2	1-104-705-11	FILM 0.1uF 20%	250V
△C3	1-115-383-11	CERAMIC 0.001uF 10%	125V
△C4	1-115-383-11	CERAMIC 0.001uF 10%	125V

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POWER BLOCK (U1)

Ref. No.	Part No.	Description	Remark
△ C5	1-115-383-11	CERAMIC	0.001uF 10% 125V
△ C6	1-104-705-11	FILM	0.1uF 20% 250V
C7	1-115-383-11	CERAMIC	0.001uF 10% 125V
C8	1-115-383-11	CERAMIC	0.001uF 10% 125V
△ C9	9-880-364-01	ELECT	470uF 200V (DSR-20)
△ C9	1-117-188-11	ELECT	150uF 20% 400V (DSR-20P)
C10	9-880-365-01	FILM	0.01uF 630V
C11	9-880-366-01	CERAMIC	680PF (DSR-20)
C11	9-880-424-01	CERAMIC	330PF (DSR-20P)
C12	9-880-366-01	CERAMIC	680PF (DSR-20)
C12	9-880-424-01	CERAMIC	330PF (DSR-20P)
C13	1-107-929-11	ELECT	10uF 20% 100V
C14	1-107-929-11	ELECT	10uF 20% 100V
C15	1-126-387-11	ELECT	2.2uF 20% 100V
C16	9-880-367-01	FILM	0.1uF
C17	9-880-368-01	FILM	470PF
C18	9-880-369-01	FILM	0.15uF
C19	9-880-370-01	FILM	0.033uF
C20	1-107-929-11	ELECT	10uF 20% 100V
C21	9-880-371-01	CERAMIC	0.001uF (DSR-20)
C21	9-880-425-01	CERAMIC	0.001uF (DSR-20P)
C22	9-880-371-01	CERAMIC	0.001uF (DSR-20)
C22	9-880-425-01	CERAMIC	0.001uF (DSR-20P)
C25	9-880-372-01	CERAMIC	0.001uF (DSR-20)
C25	9-880-426-01	CERAMIC	0.001uF (DSR-20P)
C26	9-880-372-01	CERAMIC	0.001uF (DSR-20)
C26	9-880-426-01	CERAMIC	0.001uF (DSR-20P)
C27	1-115-788-11	ELECT	820uF 20% 25V
C28	1-115-788-11	ELECT	820uF 20% 25V
C29	9-880-367-01	FILM	0.1uF
C31	9-880-367-01	FILM	0.1uF
C32	9-880-367-01	FILM	0.1uF
< CONNECTOR >			
* CN1	1-580-230-31	PIN, CONNECTOR (FOR BOARD) 2P	
* CN3	9-880-386-01	BOARD IN HARNESS 4P	
< FUSE >			
△ F1	9-880-385-01	FUSE 3.15A/125V (DSR-20)	
△ F1	9-880-433-01	FUSE T1.6A/250V (DSR-20P)	
< COIL >			
△ L1	9-880-379-01	INDUCTOR 6mH (DSR-20)	
△ L1	9-880-431-01	INDUCTOR 15mH (DSR-20P)	
△ L2	9-880-380-01	INDUCTOR 5.6mH (DSR-20)	
△ L2	9-880-432-01	INDUCTOR 22mH (DSR-20P)	
L3	9-880-381-01	INDUCTOR	
L4	9-880-382-01	INDUCTOR	
L5	9-880-382-01	INDUCTOR	
L6	9-880-383-01	INDUCTOR	
< DIODE >			
△ D1	8-719-500-58	DIODE D3SBA60	

Ref. No.	Part No.	Description	Remark
D4	8-719-979-63	DIODE UF4005 (DSR-20)	
D4	8-719-053-19	DIODE UF4007 G23 (DSR-20P)	
D5	8-719-110-72	DIODE RD30ESB2	
D6	8-719-110-72	DIODE RD30ESB2	
D8	8-719-053-20	DIODE UF4003P	
D9	8-719-109-85	DIODE RD5.1ESB2	
D10	8-719-510-37	DIODE D5LC20U	
D11	8-719-109-97	DIODE RD6.8ESB2	
D12	8-719-110-41	DIODE RD15ESB2	
< TRANSISTOR >			
Q1	8-729-037-96	TRANSISTOR 2SK2366 (DSR-20)	
Q1	9-880-423-01	TRANSISTOR 2SK2483 (DSR-20P)	
Q3	8-729-281-53	TRANSISTOR 2SC1815-GR	
< RESISTOR >			
△ R1	9-880-373-01	METAL OXIDE 220K	1W (DSR-20)
△ R1	9-880-427-01	METAL OXIDE 330K	1W (DSR-20P)
R2	9-880-374-01	METAL OXIDE 82K	2W (DSR-20)
R2	9-880-428-01	METAL OXIDE 270K	2W (DSR-20P)
R3	1-212-865-00	FUSEBLE 22	5% 1/4W F
R4	1-247-879-11	CARBON 100K	5% 1/4W
R5	1-215-884-11	METAL OXIDE 47	5% 2W
R6	1-215-880-11	METAL OXIDE 10	5% 2W
R7	9-880-375-01	METAL OXIDE 18K	2W (DSR-20)
R7	9-880-650-01	METAL OXIDE 150K	2W (DSR-20P)
R8	9-880-376-01	METAL OXIDE 0.22	5W (DSR-20)
R8	9-880-429-01	METAL OXIDE 0.47	5W (DSR-20P)
R9	1-216-377-11	METAL OXIDE 4.7	5% 2W
R10	1-215-462-00	METAL 5.1K	1% 1/4W
R11	1-249-411-11	CARBON 330	5% 1/4W
R12	1-215-383-00	METAL 27	1% 1/4W
R13	1-215-385-00	METAL 33	1% 1/4W
R14	1-249-430-11	CARBON 12K	5% 1/4W
R16	1-215-884-11	METAL OXIDE 47	5% 2W
R18	1-247-847-11	CARBON 4.7K	5% 1/4W
R19	1-247-847-11	CARBON 4.7K	5% 1/4W
R20	1-247-839-11	CARBON 2.2K	5% 1/4W
R21	1-249-417-11	CARBON 1K	5% 1/4W
R22	1-247-843-11	CARBON 3.3K	5% 1/4W
R23	1-249-399-11	CARBON 33	5% 1/4W
R24	1-215-425-00	METAL 1.5K	1% 1/4W
R25	1-215-425-00	METAL 1.5K	1% 1/4W
R26	1-215-433-00	METAL 3.3K	1% 1/4W
R27	1-249-417-11	CARBON 1K	5% 1/4W
R28	8-880-375-01	METAL OXIDE 18K	2W (DSR-20)
R28	9-880-650-01	METAL OXIDE 150K	2W (DSR-20)
R29	9-880-651-01	METAL OXIDE 680	2W
< VARIABLE RESISTOR >			
RV1	9-880-377-01	RES, VAAR, CARBON 3K	
< TRANSFORMER >			
△ T1	9-880-378-01	TRANSFORMER, POWER (DSR-20)	
△ T1	9-880-430-01	TRANSFORMER, POWER (DSR-20P)	

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POWER BLOCK (U2)

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< THERMISTOR >							
TH1	9-880-384-01	THERMISTOR 8		C44	1-117-154-11	ELECT 33uF 20% 16V	
< IC >				C45	9-880-399-01	FILM 0.047uF	
Z1	9-880-363-01	IC FA5310P		C46	9-880-652-01	ELECT 100uF 20% 16V	
△ Z2	8-749-924-80	PHOTO COUPLER PS2561L1-1-V		C47	1-117-154-11	ELECT 33uF 20% 16V	
△ Z3	8-749-924-80	PHOTO COUPLER PS2561L1-1-V		C48	9-880-652-01	ELECT 100uF 20% 16V	
*****				C49	1-126-141-11	FILM 820uF 20% 25V	
△	1-468-290-11	POWER BLOCK (U-2) (DSR-20)		C50	1-126-141-11	FILM 820uF 20% 25V	
△	1-468-291-11	POWER BLOCK (U-2) (DSR-20P)		C51	9-880-400-01	ELECT 330uF 25V	
*****				C54	9-880-406-01	ELECT 680uF 10V	
(Ref No. 20,000 Series)				C55	9-880-407-01	CERAMIC 0.0022uF	
< CAPACITOR >				C56	1-115-730-11	ELECT 180uF 20% 10V	
C1	1-115-781-11	ELECT 220uF 20% 25V		C57	9-880-403-01	FILM 0.1uF 50V	
C2	1-115-781-11	ELECT 220uF 20% 25V		C58	9-880-399-01	FILM 0.047uF	
C3	9-880-399-01	FILM 0.047uF		C59	9-880-407-01	CERAMIC 0.0022uF	
C4	9-880-399-01	FILM 0.047uF		C60	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C5	9-880-400-01	ELECT 330uF 25V		C61	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C6	9-880-401-01	FILM 0.47uF		C62	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C7	1-115-787-11	ELECT 820uF 20% 25V		C63	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C8	1-115-787-11	ELECT 820uF 20% 25V		C64	1-107-682-11	CERAMIC 1uF 10% 16V	
C10	9-880-403-01	FILM 0.1uF 50V		C65	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C11	1-115-787-11	ELECT 820uF 20% 25V		C66	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C12	9-880-404-01	ELECT 470uF 25V		C67	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C13	9-880-405-01	CERAMIC 0.001uF		C68	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C14	1-115-737-11	ELECT 0.001uF 20% 10V		C69	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C15	1-115-737-11	ELECT 0.001uF 20% 10V		C70	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C16	9-880-406-01	ELECT 680uF 10V		C71	1-115-566-11	CERAMIC 4.7uF 10% 10V	
C17	9-880-403-01	FILM 0.1uF 50V		C72	1-107-682-11	CERAMIC 1uF 10% 16V	
C18	1-115-730-11	ELECT 180uF 20% 10V		C73	1-107-682-11	CERAMIC 1uF 10% 16V	
C19	9-880-399-01	FILM 0.047uF		< CONNECTOR >			
C20	9-880-399-01	FILM 0.047uF		* CN1	9-880-417-01	PIN, CONNECTOR 4P	
C21	9-880-399-01	FILM 0.047uF		* CN2	1-506-485-11	PIN, CONNECTOR 6P	
C22	9-880-403-01	FILM 0.1uF 50V		* CN10	1-506-487-11	PIN, CONNECTOR 8P	
C23	9-880-399-01	FILM 0.047uF		* CN11	1-506-488-11	PIN, CONNECTOR 9P	
C24	1-115-730-11	ELECT 180uF 20% 10V		* CN12	1-506-487-11	PIN, CONNECTOR 8P	
C25	9-880-404-01	ELECT 470uF 25V		* CN13	1-506-481-11	CONNECTOR 2P	
C26	9-880-399-01	FILM 0.047uF		< FUSE >			
C27	9-880-407-01	CERAMIC 0.0022uF		△ F2	8-880-416-01	FUSE 5A/250V	
C28	9-880-406-01	ELECT 680uF 10V		< COIL >			
C29	9-880-406-01	ELECT 680uF 10V		L1	9-880-408-01	INDUCTOR 0.5mH	
C30	9-880-402-01	FILM 0.01uF		L2	9-880-409-01	INDUCTOR 1mH	
C31	9-880-406-01	ELECT 680uF 10V		L3	9-880-410-01	INDUCTOR 150uH	
C32	9-880-404-01	ELECT 470uF 25V		L4	1-459-407-00	COIL, FERRITE CHOKE 68uH	
C33	1-124-534-11	ELECT 680uF 20% 16V		L5	9-880-411-01	INDUCTOR 150uH	
C34	9-880-402-01	FILM 0.01uF		L6	9-880-412-01	INDUCTOR 15uH	
C35	1-115-754-11	ELECT 120uF 20% 16V		L8	9-880-413-01	INDUCTOR 330uH	
C36	9-880-403-01	FILM 0.1uF 50V		L9	9-880-412-01	INDUCTOR 15uH	
C37	1-115-730-11	ELECT 180uF 20% 10V		L11	9-880-414-01	INDUCTOR 150uH	
C38	9-880-399-01	FILM 0.047uF		L12	9-880-415-01	INDUCTOR	
C39	9-880-402-01	FILM 0.01uF		L13	9-880-412-01	INDUCTOR 15uH	
C40	9-880-402-01	FILM 0.01uF		L15	9-880-412-01	INDUCTOR 15uH	
C41	9-880-399-01	FILM 0.047uF		L16	9-880-412-01	INDUCTOR 15uH	
C42	9-880-399-01	FILM 0.047uF		L17	9-880-412-01	INDUCTOR 15uH	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK (U-2)

VA-102

Ref. No.	Part No.	Description	Remark		
< DIODE >					
D1	8-719-500-70	DIODE D5S4M			
D2	8-719-109-89	DIODE RD5.6ESB2			
D3	8-719-500-70	DIODE D5S4M			
D4	8-719-043-76	DIODE AK04V0			
D5	8-719-018-83	DIODE D2S4M			
D6	8-719-018-83	DIODE D2S4M			
D7	8-719-107-94	DIODE 1SS202-1			
D8	8-719-107-94	DIODE 1SS202-1			
< TRANSISTOR >					
Q1	8-729-201-53	TRANSISTOR 2SA1015-GR			
Q2	8-729-201-53	TRANSISTOR 2SA1015-GR			
Q3	8-729-281-53	TRANSISTOR 2SC1815-GR			
Q4	8-729-203-76	TRANSISTOR 2SC3328-Y			
< RESISTOR >					
R1	1-247-839-11	CARBON 2.2K	5%	1/4W	
R2	1-215-454-00	METAL 24K	1%	1/4W	
R3	1-215-427-00	METAL 1.8K	1%	1/4W	
R4	1-215-429-00	METAL 2.2K	1%	1/4W	
R5	1-216-431-11	METAL OXIDE 560	5%	1W	
R6	1-215-857-11	METAL OXIDE 10	5%	1W	
R7	1-215-443-00	METAL 8.2K	1%	1/4W	
R8	1-215-416-00	METAL 620	1%	1/4W	
R9	1-215-429-00	METAL 2.2K	1%	1/4W	
R10	1-216-448-11	METAL OXIDE 39	5%	2W	
R11	1-249-417-11	CARBON 1K	5%	1/4W	
R12	1-249-424-11	CARBON 3.9K	5%	1/4W	
R14	1-249-417-11	CARBON 1K	5%	1/4W	
R15	1-247-847-11	CARBON 4.7K	5%	1/4W	
R16	1-249-438-11	CARBON 56K	5%	1/4W	
R17	1-249-438-11	CARBON 56K	5%	1/4W	
R18	1-249-438-11	CARBON 56K	5%	1/4W	
R19	1-247-847-11	CARBON 4.7K	5%	1/4W	
R21	1-249-417-11	CARBON 1K	5%	1/4W	
R22	1-215-857-11	METAL OXIDE 10	5%	1W	
R23	1-215-387-00	METAL 39	1%	1/4W	
R24	1-215-408-00	METAL 300	1%	1/4W	
R25	1-215-405-00	METAL 220	1%	1/4W	
R26	1-215-431-00	METAL 2.7K	1%	1/4W	
R27	1-215-449-00	METAL 15K	1%	1/4W	
R28	1-215-430-00	METAL 2.4K	1%	1/4W	
R29	1-247-841-11	CARBON 2.7K	5%	1/4W	
R30	1-249-417-11	CARBON 1K	5%	1/4W	
R31	1-215-447-00	METAL 12K	1%	1/4W	
R32	1-215-423-00	METAL 1.2K	1%	1/4W	
R33	1-215-423-00	METAL 1.2K	1%	1/4W	
R43	1-215-857-11	METAL OXIDE 10	5%	1W	
R45	1-215-443-00	METAL 8.2K	1%	1/4W	
R46	1-215-413-00	METAL 470	1%	1/4W	
R47	1-215-429-00	METAL 2.2K	1%	1/4W	
R48	1-247-839-11	CARBON 2.2K	5%	1/4W	
R49	1-249-402-11	CARBON 56	5%	1/4W	
R50	1-247-855-11	CARBON 10K	5%	1/4W	
R53	1-215-857-11	METAL OXIDE 10	5%	1W	
< IC >					
Z1	8-759-164-80	IC LM2577-ADJ			
Z2	8-759-520-49	IC PQ30RV21			

Ref. No.	Part No.	Description	Remark		
Z3	8-759-293-98	IC LM2576T-ADJLB03			
Z4	9-880-397-01	IC uPC29L03J			
Z5	8-759-069-28	IC PQ05RF11			
Z6	9-880-398-01	IC TD62305AP			
Z7	8-759-490-61	IC LM2575T-ADJLB03			
Z8	8-759-490-61	IC LM2575T-ADJLB03			
Z10	8-759-089-53	IC uPC79M05HF			
Z11	8-759-098-24	IC PQ30RV11			

*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)			
*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)			

(Ref No. 1,000 Series)					
< CAPACITOR >					
C051	1-113-619-11	CERAMIC CHIP 0.47uF		10V	
C052	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C053	1-113-619-11	CERAMIC CHIP 0.47uF		10V	
C055	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C056	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C057	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	
C058	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	
C059	1-124-778-00	ELECT CHIP 22uF	20%	6.3V	
C101	1-128-004-11	ELECT CHIP 10uF	20%	16V	
C102	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C103	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C104	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C105	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C106	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C107	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C108	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C109	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C110	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C111	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C201	1-124-778-00	ELECT CHIP 22uF	20%	6.3V	
C202	1-124-778-00	ELECT CHIP 22uF	20%	6.3V	
C203	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C204	1-126-205-11	ELECT CHIP 47uF	20%	6.3V	
C205	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C206	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C207	1-162-958-11	CERAMIC CHIP 270PF	5%	50V	
C208	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C209	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C210	1-162-923-11	CERAMIC CHIP 47PF	5%	50V	
C211	1-124-778-00	ELECT CHIP 22uF	20%	6.3V	
C212	1-124-778-00	ELECT CHIP 22uF	20%	6.3V	
C213	1-128-003-11	ELECT CHIP 22uF	20%	4V	
C214	1-128-003-11	ELECT CHIP 22uF	20%	4V	
C215	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C216	1-128-003-11	ELECT CHIP 22uF	20%	4V	
C217	1-164-360-11	CERAMIC CHIP 0.1uF		16V	
C218	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C219	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C220	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C221	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V	
C223	1-162-967-11	CERAMIC CHIP 0.0033uF	10%	50V	
C224	1-126-206-11	ELECT CHIP 100uF	20%	6.3V	
C225	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	
C226	1-124-778-00	ELECT CHIP 22uF	20%	6.3V	
C227	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V	

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C228	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C288	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C229	1-128-007-11	ELECT CHIP	2.2uF	20%	35V	C290	1-128-003-11	ELECT CHIP	22uF	20%	4V
C230	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C291	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (DSR-20P)
C231	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	C292	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C232	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C293	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C233	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C294	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C234	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C295	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C297	1-128-003-11	ELECT CHIP	22uF	20%	4V
C236	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	C300	1-164-360-11	CERAMIC CHIP	0.1uF		16V (DSR-20P)
C237	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C301	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (DSR-20P)
C238	1-128-004-11	ELECT CHIP	10uF	20%	16V	C304	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C239	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C305	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C240	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C307	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C241	1-128-004-11	ELECT CHIP	10uF	20%	16V	C308	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C242	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C309	1-164-360-11	CERAMIC CHIP	0.1uF		16V (DSR-20P)
C243	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C311	1-128-004-11	ELECT CHIP	10uF	20%	16V (DSR-20P)
C244	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C312	1-164-360-11	CERAMIC CHIP	0.1uF		16V (DSR-20P)
C245	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C401	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C246	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C403	1-128-003-11	ELECT CHIP	22uF	20%	4V
C248	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C404	1-128-003-11	ELECT CHIP	22uF	20%	4V
C249	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	C405	1-128-003-11	ELECT CHIP	22uF	20%	4V
C250	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C251	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V (DSR-20)	C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C251	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V (DSR-20P)	C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C252	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C409	1-128-003-11	ELECT CHIP	22uF	20%	4V
C253	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C410	1-128-007-11	ELECT CHIP	2.2uF	20%	35V
C254	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C255	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C412	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C256	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C257	1-128-003-11	ELECT CHIP	22uF	20%	4V	C414	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C258	1-128-003-11	ELECT CHIP	22uF	20%	4V	C415	1-128-003-11	ELECT CHIP	22uF	20%	4V
C260	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C416	1-128-003-11	ELECT CHIP	22uF	20%	4V
C261	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	C417	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C262	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C418	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C264	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C419	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C265	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C420	1-115-156-11	CERAMIC CHIP	1uF		10V
C266	1-115-156-11	CERAMIC CHIP	1uF		10V	C421	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C268	1-113-619-11	CERAMIC CHIP	0.47uF		10V	C422	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C423	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C270	1-115-156-11	CERAMIC CHIP	1uF		10V	C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C271	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C426	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C272	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C427	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C273	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C429	1-115-156-11	CERAMIC CHIP	1uF		10V
C274	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C430	1-115-156-11	CERAMIC CHIP	1uF		10V
C275	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	C433	1-115-156-11	CERAMIC CHIP	1uF		10V
C276	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	C434	1-115-156-11	CERAMIC CHIP	1uF		10V
C277	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C435	1-115-156-11	CERAMIC CHIP	1uF		10V
C278	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C279	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	C437	1-128-003-11	ELECT CHIP	22uF	20%	4V
C280	1-128-003-11	ELECT CHIP	22uF	20%	4V	C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C281	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V	C441	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C282	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C443	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C283	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V						
C284	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C285	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V						
C286	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C287	1-126-206-11	ELECT CHIP	100uF	20%	6.3V						

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Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C444	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C606	1-128-004-11	ELECT CHIP	10uF	20%	16V
C445	1-115-156-11	CERAMIC CHIP	1uF		10V	C608	1-128-004-11	ELECT CHIP	10uF	20%	16V
C446	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C612	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (DSR-20)
C447	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C448	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C612	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (DSR-20P)
C449	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C613	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C450	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C614	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C451	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V						
C453	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C615	1-162-917-11	CERAMIC CHIP	15PF	5%	50V (DSR-20)
C454	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C616	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C455	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C617	1-216-829-11	METAL CHIP	4.7K	5%	1/16W Note
C456	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C618	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C457	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V						
C458	1-128-003-11	ELECT CHIP	22uF	20%	4V	C619	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C459	1-115-156-11	CERAMIC CHIP	1uF		10V	C621	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C460	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C624	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C461	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C628	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C462	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C629	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C463	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V						
C464	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C630	1-128-004-11	ELECT CHIP	10uF	20%	16V
C465	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C631	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C466	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C651	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C467	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C652	1-128-004-11	ELECT CHIP	10uF	20%	16V
C468	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C654	1-128-003-11	ELECT CHIP	22uF	20%	4V
C469	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C655	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C470	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C656	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C471	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C657	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C472	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C658	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C473	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	C659	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C474	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C660	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C475	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C661	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C476	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C662	1-128-007-11	ELECT CHIP	2.2uF	20%	35V
C478	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C663	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C479	1-164-237-11	CERAMIC CHIP	16PF	5%	50V	C664	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C480	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	C665	1-164-237-11	CERAMIC CHIP	16PF	5%	50V
C481	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	C666	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C482	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C667	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C483	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C670	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C484	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	C671	1-115-156-11	CERAMIC CHIP	1uF		10V
C485	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	C672	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C486	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C673	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C487	1-128-004-11	ELECT CHIP	10uF	20%	16V	C674	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C489	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	C675	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C490	1-162-905-11	CERAMIC CHIP	1PF	0.25PF	50V	C676	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C491	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C678	1-128-003-11	ELECT CHIP	22uF	20%	4V
C492	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	C680	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C493	1-128-004-11	ELECT CHIP	10uF	20%	16V	C681	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C494	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C682	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C496	1-128-007-11	ELECT CHIP	2.2uF	20%	35V	C683	1-126-927-11	ELECT	1000uF	20%	6.3V
C497	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C701	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C498	1-128-003-11	ELECT CHIP	22uF	20%	4V	C702	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C500	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C703	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C501	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C704	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C705	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C706	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C506	1-128-004-11	ELECT CHIP	10uF	20%	16V	C707	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C601	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C708	1-128-004-11	ELECT CHIP	10uF	20%	16V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C709	1-128-004-11	ELECT CHIP	10uF	20%	16V
C603	1-128-004-11	ELECT CHIP	10uF	20%	16V	C710	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C604	1-115-156-11	CERAMIC CHIP	1uF		10V	C711	1-162-919-11	CERAMIC CHIP	22PF	5%	50V

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C712	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	C774	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C713	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C851	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C714	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C852	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C715	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C853	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C854	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C717	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C855	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C718	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	C856	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C719	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C858	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C720	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C859	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C721	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C860	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C722	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C861	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C723	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C862	1-126-204-11	ELECT CHIP	47uF	20%	16V
C724	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C863	1-126-400-11	ELECT	22uF	20%	35V
C725	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C864	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C726	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C865	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C727	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C866	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C728	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C867	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C729	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C869	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C730	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C870	1-128-013-11	ELECT CHIP	1uF	20%	50V
C731	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C871	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C732	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C872	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C733	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C874	1-126-204-11	ELECT CHIP	47uF	20%	16V
C734	1-128-007-11	ELECT CHIP	2.2uF	20%	35V	C875	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C735	1-128-007-11	ELECT CHIP	2.2uF	20%	35V	C876	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C736	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C877	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C737	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C881	1-126-927-11	ELECT	1000uF	20%	6.3V
C738	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C883	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C739	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C886	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C740	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C887	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C741	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	C888	1-128-004-11	ELECT CHIP	10uF	20%	16V
C742	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C889	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C743	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C890	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C744	1-164-389-11	CERAMIC CHIP	300PF	5%	50V	C891	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C745	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C892	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C746	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C893	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C747	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	C894	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C748	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C895	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C749	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C896	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C750	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C897	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C751	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C898	1-126-396-11	ELECT CHIP	47uF	20%	16V
C752	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C899	1-126-396-11	ELECT CHIP	47uF	20%	16V
C753	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C900	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C754	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	C901	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C755	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C906	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C756	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C907	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C757	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C908	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C758	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C909	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C759	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C910	1-109-994-11	CERAMIC CHIP	2.2uF	10%	10V
C760	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C912	1-104-905-11	CAPACITOR	0.22F		5.5V
C761	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C913	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C762	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C914	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C763	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C915	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C764	1-128-004-11	ELECT CHIP	10uF	20%	16V	C916	1-128-013-11	ELECT CHIP	1uF	20%	50V
C765	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C917	1-126-197-11	ELECT CHIP	10uF	20%	50V
C766	1-128-004-11	ELECT CHIP	10uF	20%	16V	C918	1-126-204-11	ELECT CHIP	47uF	20%	16V
C767	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C919	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C768	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C920	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C771	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C921	1-126-393-11	ELECT CHIP	33uF	20%	10V
C772	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C999	1-161-055-00	CERAMIC	0.022uF	10%	50V
C773	1-164-360-11	CERAMIC CHIP	0.1uF		16V						

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< CONNECTOR >				< IC >			
CN051	1-770-305-11	CONNECTOR, FFC/FPC 10P		IC051	8-759-032-23	IC TC74HC74AF (EL)	
CN101	1-774-770-11	CONNECTOR, FFC/FPC 30P		IC052	8-759-521-97	IC HD6433837H	
CN102	1-774-770-11	CONNECTOR, FFC/FPC 30P		IC053	8-759-096-87	IC TC7WU04FU (TE12R)	
CN401	1-774-767-11	CONNECTOR, FFC/FPC 15P		IC101	8-759-079-52	IC TC74VHC08FS (EL)	
* CN601	1-564-005-11	PIN, CONNECTOR 6P		IC102	8-759-327-60	IC TC7W125FU-TE12R	
CN602	1-779-369-11	CONNECTOR, SQUARE TYPE (INDI) 4P (DV IN/OUT)		IC103	8-759-079-67	IC TC74VHC125FS (EL)	
CN701	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P		IC104	8-759-079-53	IC TC74VHCT08FS (EL)	
CN702	1-778-276-11	CONNECTOR, FFC/FPC 12P		IC105	8-759-079-53	IC TC74VHCT08FS (EL)	
CN703	1-774-767-11	CONNECTOR, FFC/FPC 15P		IC106	8-759-079-53	IC TC74VHCT08FS (EL)	
CN851	1-774-770-11	CONNECTOR, FFC/FPC 30P		IC201	8-759-337-26	IC MM1115XFBE	
CN852	1-506-473-11	PIN, CONNECTOR 8P		IC202	8-759-433-44	IC MM1031XML	
< TRIMMER >				IC203	8-759-337-26	IC MM1115XFBE	
CT201	1-141-424-11	CAP, ADJ		IC204	8-759-432-78	IC MM1111XFF	
CT401	1-141-424-11	CAP, ADJ		IC205	8-759-420-62	IC AN3916	
CT851	1-141-423-61	CAP, ADJ 20PF		IC206	8-759-711-62	IC NJM2240M (TE2)	
< DIODE >				IC207	8-752-352-20	IC CXD2023Q (DSR-20)	
D051	8-719-421-72	DIODE MA132WA		IC207	8-752-372-78	IC CXD2024AQ-TL (DSR-20P)	
D052	8-719-421-72	DIODE MA132WA		IC208	8-759-603-54	IC M51271FP-70AD	
D201	8-719-404-49	DIODE MA111-TX		IC210	8-759-239-58	IC TC74HC221AF (EL) (DSR-20P)	
D401	8-713-101-85	DIODE 1T363-01-T8A		IC213	8-759-058-54	IC TC7S00FU (TE85R) (DSR-20P)	
D403	8-719-404-49	DIODE MA111-TX		IC401	8-759-337-26	IC MM1115XFBE	
D404	8-719-404-49	DIODE MA111-TX		IC402	8-759-432-78	IC MM1111XFF	
D851	8-719-421-59	DIODE MA3075WA-(TX)		IC403	8-759-164-09	IC LA7218M-TE-R	
D852	8-719-421-59	DIODE MA3075WA-(TX)		IC404	8-752-056-59	IC CXA1592R-T4	
D853	8-719-400-71	DIODE MA3082-TX		IC405	8-759-483-56	IC MB90089PF-G-196-BND-ER	
D855	8-719-421-51	DIODE MA738-TX		IC406	8-759-182-16	IC MM1196XFBE	
D856	8-719-420-51	DIODE MA729-TX		IC407	8-752-374-89	IC CXD2192Q-T4	
D858	8-719-404-49	DIODE MA111-TX		IC602	8-759-349-01	IC MC68HC68VBIFB	
D859	8-719-404-49	DIODE MA111-TX		IC651	8-759-368-82	IC MB90089PF-G-155-BND-ER	
D861	8-719-400-56	DIODE MA3062H-TX		IC652	8-759-164-09	IC LA7218M-TE-R	
D862	8-719-421-59	DIODE MA3075WA-(TX)		IC653	8-759-337-26	IC MM1115XFBE	
D863	8-719-059-18	DIODE RD6.2FM-T1		IC701	8-759-358-47	IC NJM2115V (TE2)	
D864	8-719-421-27	DIODE MA728-TX		IC702	8-759-066-59	IC TC74HC4053AFS-EL	
D866	8-719-404-49	DIODE MA111-TX		IC703	8-759-066-59	IC TC74HC4053AFS-EL	
D867	8-719-421-51	DIODE MA738-TX		IC704	8-759-358-47	IC NJM2115V (TE2)	
< DELAY LINE >				IC705	8-759-358-47	IC NJM2115V (TE2)	
DL201	1-411-661-11	LINE, LC DELAY		IC706	8-759-358-47	IC NJM2115V (TE2)	
< FERRITE BEAD >				IC707	8-759-358-47	IC NJM2115V (TE2)	
FB851	1-543-948-11	FERRITE OUH		IC708	8-759-481-66	IC DS1801E-014TE2	
FB852	1-543-948-11	FERRITE OUH		IC709	8-759-358-47	IC NJM2115V (TE2)	
FB853	1-543-948-11	FERRITE OUH		IC710	8-759-358-47	IC NJM2115V (TE2)	
< FILTER >				IC711	8-759-066-59	IC TC74HC4053AFS-EL	
FL201	1-236-925-11	FILTER, LOW PASS		IC712	8-759-358-47	IC NJM2115V (TE2)	
FL202	1-236-926-11	FILTER, BAND PASS (DSR-20)		IC713	8-759-358-47	IC NJM2115V (TE2)	
FL202	1-239-153-11	FILTER, BAND PASS (DSR-20P)		IC714	8-759-358-47	IC NJM2115V (TE2)	
FL203	1-233-501-11	FILTER, LOW PASS		IC715	8-759-358-47	IC NJM2115V (TE2)	
FL204	1-233-500-11	FILTER, LOW PASS		IC716	8-759-358-47	IC NJM2115V (TE2)	
FL205	1-233-501-11	FILTER, LOW PASS		IC717	8-759-358-47	IC NJM2115V (TE2)	
FL401	1-233-502-11	FILTER, BAND PASS (DSR-20)		IC718	8-759-358-47	IC NJM2115V (TE2)	
FL401	1-233-591-11	FILTER, BAND PASS (DSR-20P)		IC851	8-759-356-27	IC NJM2129M-TE2	
				IC852	8-759-521-98	IC S579C11PJ	
				IC853	8-759-066-59	IC TC74HC4053AFS-EL	
				IC854	8-759-445-93	IC AK6440AM-E2	
				IC856	1-473-301-11	IC CONVERTER UNIT, DC/DC	
				IC857	8-759-489-27	IC S-3513AEFS-TB	
				IC858	8-759-248-87	IC MM1256XF-BE	
				IC861	8-759-059-05	IC TL1596CPW-ELM1000	
				IC862	8-759-822-95	IC L79M05T-FA-TL	
				IC863	8-759-157-22	IC PQ05TZ1U	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
IC864	8-759-929-26	IC TL431CPS-E20		< TRANSISTOR >			
IC865	8-759-079-46	IC TC74VHC00FS (EL)		Q101	8-729-015-76	TRANSISTOR UN5211-TX	
IC866	8-759-363-18	IC TC7ST04FU (TE85R)		Q102	8-729-015-76	TRANSISTOR UN5211-TX	
< JACK >				Q103	8-729-015-76	TRANSISTOR UN5211-TX	
J851	1-573-798-11	JACK, MINIATURE (DIA. 3.5) (CONTROL S IN)		Q107	8-729-015-76	TRANSISTOR UN5211-TX	
J852	1-573-798-11	JACK, MINIATURE (DIA. 3.5) (CONTROL S OUT)		Q108	8-729-015-76	TRANSISTOR UN5211-TX	
J853	1-691-258-11	JACK (LANC)		Q201	8-729-905-35	TRANSISTOR 2SC4081T106R	
< COIL >				Q202	8-729-905-35	TRANSISTOR 2SC4081T106R	
L051	1-412-029-11	INDUCTOR CHIP 10uH		Q203	8-729-905-35	TRANSISTOR 2SC4081T106R	
L201	1-412-029-11	INDUCTOR CHIP 10uH		Q204	8-729-905-35	TRANSISTOR 2SC4081T106R	
L202	1-410-381-11	INDUCTOR CHIP 10uH		Q205	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L203	1-412-029-11	INDUCTOR CHIP 10uH		Q206	8-729-905-35	TRANSISTOR 2SC4081T106R	
L204	1-412-029-11	INDUCTOR CHIP 10uH		Q207	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L205	1-412-029-11	INDUCTOR CHIP 10uH		Q208	8-729-427-83	TRANSISTOR XP6501-TXE	
L206	1-412-029-11	INDUCTOR CHIP 10uH		Q209	8-729-905-35	TRANSISTOR 2SC4081T106R	
L207	1-412-029-11	INDUCTOR CHIP 10uH		Q210	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L208	1-410-381-11	INDUCTOR CHIP 10uH		Q211	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L211	1-412-808-21	INDUCTOR 470uH		Q212	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L213	1-412-031-11	INDUCTOR CHIP 47uH		Q213	8-729-905-35	TRANSISTOR 2SC4081T106R	
L216	1-412-029-11	INDUCTOR CHIP 10uH		Q214	8-729-905-35	TRANSISTOR 2SC4081T106R	
L217	1-412-029-11	INDUCTOR CHIP 10uH		Q215	8-729-905-35	TRANSISTOR 2SC4081T106R	
L218	1-412-029-11	INDUCTOR CHIP 10uH		Q216	8-729-905-35	TRANSISTOR 2SC4081T106R	
L219	1-412-029-11	INDUCTOR CHIP 10uH		Q217	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L220	1-412-029-11	INDUCTOR CHIP 10uH (DSR-20P)		Q218	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L401	1-412-029-11	INDUCTOR CHIP 10uH		Q221	8-729-905-35	TRANSISTOR 2SC4081T106R	
L402	1-412-029-11	INDUCTOR CHIP 10uH		Q222	8-729-905-35	TRANSISTOR 2SC4081T106R	
L403	1-412-029-11	INDUCTOR CHIP 10uH		Q223	8-729-905-35	TRANSISTOR 2SC4081T106R	
L404	1-412-029-11	INDUCTOR CHIP 10uH		Q224	8-729-427-83	TRANSISTOR XP6501-TXE	
L406	1-412-030-11	INDUCTOR CHIP 22uH		Q225	8-729-905-35	TRANSISTOR 2SC4081T106R	
L407	1-412-029-11	INDUCTOR CHIP 10uH		Q226	8-729-905-35	TRANSISTOR 2SC4081T106R	
L408	1-412-026-11	INDUCTOR CHIP 1uH		Q227	8-729-905-35	TRANSISTOR 2SC4081T106R	
L409	1-412-034-11	INDUCTOR CHIP 330uH		Q228	8-729-427-83	TRANSISTOR XP6501-TXE	
L410	1-410-385-11	INDUCTOR CHIP 22uH		Q229	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
L411	1-412-029-11	INDUCTOR CHIP 10uH		Q231	8-729-905-35	TRANSISTOR 2SC4081T106R	
L412	1-412-029-11	INDUCTOR CHIP 10uH		Q232	8-729-427-83	TRANSISTOR XP6501-TXE	
L601	1-412-029-11	INDUCTOR CHIP 10uH		Q233	8-729-905-35	TRANSISTOR 2SC4081T106R	
L602	1-410-389-31	INDUCTOR CHIP 47uH (DSR-20)		Q403	8-729-905-35	TRANSISTOR 2SC4081T106R	
L602	1-410-388-31	INDUCTOR CHIP 39uH (DSR-20P)		Q404	8-729-905-35	TRANSISTOR 2SC4081T106R	
L603	1-412-029-11	INDUCTOR CHIP 10uH		Q405	8-729-905-35	TRANSISTOR 2SC4081T106R	
L604	1-412-029-11	INDUCTOR CHIP 10uH		Q406	8-729-905-35	TRANSISTOR 2SC4081T106R	
L651	1-412-029-11	INDUCTOR CHIP 10uH		Q407	8-729-427-83	TRANSISTOR XP6501-TXE	
L652	1-410-385-11	INDUCTOR CHIP 22uH		Q408	8-729-402-42	TRANSISTOR UN5213-TX	
L653	1-410-385-11	INDUCTOR CHIP 22uH		Q409	8-729-402-42	TRANSISTOR UN5213-TX	
L654	1-412-029-11	INDUCTOR CHIP 10uH		Q410	8-729-905-35	TRANSISTOR 2SC4081T106R	
L655	1-412-026-11	INDUCTOR CHIP 1uH		Q411	8-729-905-35	TRANSISTOR 2SC4081T106R	
L656	1-410-385-11	INDUCTOR CHIP 22uH		Q412	8-729-905-35	TRANSISTOR 2SC4081T106R	
L657	1-412-029-11	INDUCTOR CHIP 10uH		Q413	8-729-905-35	TRANSISTOR 2SC4081T106R	
L851	1-412-026-11	INDUCTOR CHIP 1uH		Q414	8-729-905-35	TRANSISTOR 2SC4081T106R	
L852	1-412-026-11	INDUCTOR CHIP 1uH		Q415	8-729-427-83	TRANSISTOR XP6501-TXE	
L853	1-412-031-11	INDUCTOR CHIP 47uH		Q416	8-729-402-84	TRANSISTOR XN4601-TW	
L854	1-412-029-11	INDUCTOR CHIP 10uH		Q417	8-729-427-83	TRANSISTOR XP6501-TXE	
L855	1-412-028-11	INDUCTOR CHIP 4.7uH		Q419	8-729-905-35	TRANSISTOR 2SC4081T106R	
L856	1-412-028-11	INDUCTOR CHIP 4.7uH		Q420	8-729-905-35	TRANSISTOR 2SC4081T106R	
L857	1-412-028-11	INDUCTOR CHIP 4.7uH		Q601	8-729-905-35	TRANSISTOR 2SC4081T106R	
L858	1-412-028-11	INDUCTOR CHIP 4.7uH		Q602	8-729-905-35	TRANSISTOR 2SC4081T106R	
				Q604	8-729-905-35	TRANSISTOR 2SC4081T106R	
				Q605	8-729-905-35	TRANSISTOR 2SC4081T106R	
				Q606	8-729-905-35	TRANSISTOR 2SC4081T106R	
				Q607	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	
				Q613	8-729-026-52	TRANSISTOR 2SA1576A-T106-R	

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q651	8-729-905-35	TRANSISTOR 2SC4081T106R		R115	1-216-809-11	METAL CHIP 100 5%	1/16W
Q653	8-729-905-35	TRANSISTOR 2SC4081T106R		R117	1-216-809-11	METAL CHIP 100 5%	1/16W
Q654	8-729-905-35	TRANSISTOR 2SC4081T106R		R118	1-216-797-11	METAL CHIP 10 5%	1/16W
Q655	8-729-026-52	TRANSISTOR 2SA1576A-T106-R		R119	1-216-797-11	METAL CHIP 10 5%	1/16W
Q656	8-729-905-35	TRANSISTOR 2SC4081T106R					(DSR-20P)
Q658	8-729-026-52	TRANSISTOR 2SA1576A-T106-R		R120	1-216-809-11	METAL CHIP 100 5%	1/16W
Q701	8-729-015-76	TRANSISTOR UN5211-TX		R121	1-216-809-11	METAL CHIP 100 5%	1/16W
Q702	8-729-015-74	TRANSISTOR UN5111-TX		R122	1-216-809-11	METAL CHIP 100 5%	1/16W
Q703	8-729-905-35	TRANSISTOR 2SC4081T106R		R123	1-216-809-11	METAL CHIP 100 5%	1/16W
Q704	8-729-905-35	TRANSISTOR 2SC4081T106R		R124	1-216-809-11	METAL CHIP 100 5%	1/16W
Q705	8-729-402-42	TRANSISTOR UN5213-TX		R125	1-216-809-11	METAL CHIP 100 5%	1/16W
Q706	8-729-403-35	TRANSISTOR UN5113-TX		R126	1-216-809-11	METAL CHIP 100 5%	1/16W
Q707	8-729-015-76	TRANSISTOR UN5211-TX		R127	1-216-797-11	METAL CHIP 10 5%	1/16W
Q708	8-729-028-70	TRANSISTOR UN2225T-(TX)		R128	1-216-809-11	METAL CHIP 100 5%	1/16W
Q709	8-729-028-70	TRANSISTOR UN2225T-(TX)		R129	1-216-797-11	METAL CHIP 10 5%	1/16W
Q710	8-729-028-70	TRANSISTOR UN2225T-(TX)		R130	1-216-809-11	METAL CHIP 100 5%	1/16W
Q711	8-729-028-70	TRANSISTOR UN2225T-(TX)		R131	1-216-809-11	METAL CHIP 100 5%	1/16W
Q712	8-729-028-70	TRANSISTOR UN2225T-(TX)		R132	1-216-797-11	METAL CHIP 10 5%	1/16W
Q713	8-729-028-70	TRANSISTOR UN2225T-(TX)		R133	1-216-809-11	METAL CHIP 100 5%	1/16W
Q851	8-729-905-35	TRANSISTOR 2SC4081T106R		R134	1-216-797-11	METAL CHIP 10 5%	1/16W
Q852	8-729-402-42	TRANSISTOR UN5213-TX		R135	1-216-809-11	METAL CHIP 100 5%	1/16W
Q853	8-729-014-91	TRANSISTOR 2SD2185S-TX		R136	1-216-809-11	METAL CHIP 100 5%	1/16W
Q854	8-729-905-35	TRANSISTOR 2SC4081T106R		R137	1-216-809-11	METAL CHIP 100 5%	1/16W
Q855	8-729-905-35	TRANSISTOR 2SC4081T106R		R138	1-216-809-11	METAL CHIP 100 5%	1/16W
Q856	8-729-403-35	TRANSISTOR UN5113-TX		R139	1-216-809-11	METAL CHIP 100 5%	1/16W
Q857	8-729-402-42	TRANSISTOR UN5213-TX		R140	1-216-809-11	METAL CHIP 100 5%	1/16W
< RESISTOR >				R141	1-216-809-11	METAL CHIP 100 5%	1/16W
R051	1-216-833-11	METAL CHIP 10K 5%	1/16W	R142	1-216-809-11	METAL CHIP 100 5%	1/16W
R052	1-216-833-11	METAL CHIP 10K 5%	1/16W	R143	1-216-809-11	METAL CHIP 100 5%	1/16W
R053	1-216-833-11	METAL CHIP 10K 5%	1/16W	R144	1-216-809-11	METAL CHIP 100 5%	1/16W
R054	1-216-833-11	METAL CHIP 10K 5%	1/16W	R145	1-216-809-11	METAL CHIP 100 5%	1/16W
R056	1-216-864-11	METAL CHIP 0 5%	1/16W	R146	1-216-797-11	METAL CHIP 10 5%	1/16W
R059	1-216-823-11	METAL CHIP 1.5K 5%	1/16W	R147	1-216-797-11	METAL CHIP 10 5%	1/16W
R060	1-216-801-11	METAL CHIP 22 5%	1/16W	R148	1-216-797-11	METAL CHIP 10 5%	1/16W
R061	1-216-857-11	METAL CHIP 1M 5%	1/16W	R152	1-216-833-11	METAL CHIP 10K 5%	1/16W
R062	1-216-801-11	METAL CHIP 22 5%	1/16W	R153	1-216-833-11	METAL CHIP 10K 5%	1/16W
R063	1-216-801-11	METAL CHIP 22 5%	1/16W	R154	1-216-833-11	METAL CHIP 10K 5%	1/16W
R064	1-216-833-11	METAL CHIP 10K 5%	1/16W	R155	1-216-821-11	METAL CHIP 1K 5%	1/16W
R065	1-216-864-11	METAL CHIP 0 5%	1/16W	R156	1-216-809-11	METAL CHIP 100 5%	1/16W
R066	1-216-801-11	METAL CHIP 22 5%	1/16W	R157	1-216-809-11	METAL CHIP 100 5%	1/16W
R067	1-216-857-11	METAL CHIP 1M 5%	1/16W	R158	1-216-809-11	METAL CHIP 100 5%	1/16W
R068	1-216-801-11	METAL CHIP 22 5%	1/16W	R159	1-216-809-11	METAL CHIP 100 5%	1/16W
R069	1-216-830-11	METAL CHIP 5.6K 5%	1/16W	R160	1-216-809-11	METAL CHIP 100 5%	1/16W
R070	1-216-833-11	METAL CHIP 10K 5%	1/16W	R161	1-216-809-11	METAL CHIP 100 5%	1/16W
R071	1-216-833-11	METAL CHIP 10K 5%	1/16W	R162	1-216-809-11	METAL CHIP 100 5%	1/16W
R101	1-216-797-11	METAL CHIP 10 5%	1/16W	R163	1-216-809-11	METAL CHIP 100 5%	1/16W
R102	1-216-797-11	METAL CHIP 10 5%	1/16W	R164	1-216-809-11	METAL CHIP 100 5%	1/16W
R103	1-216-833-11	METAL CHIP 10K 5%	1/16W	R165	1-216-809-11	METAL CHIP 100 5%	1/16W
R104	1-216-833-11	METAL CHIP 10K 5%	1/16W	R166	1-216-833-11	METAL CHIP 10K 5%	1/16W
R105	1-216-797-11	METAL CHIP 10 5%	1/16W	R167	1-216-809-11	METAL CHIP 100 5%	1/16W
R106	1-216-797-11	METAL CHIP 10 5%	1/16W	R168	1-216-809-11	METAL CHIP 100 5%	1/16W
R107	1-216-797-11	METAL CHIP 10 5%	1/16W	R169	1-216-809-11	METAL CHIP 100 5%	1/16W
R108	1-216-833-11	METAL CHIP 10K 5%	1/16W	R170	1-216-833-11	METAL CHIP 10K 5%	1/16W
R109	1-216-797-11	METAL CHIP 10 5%	1/16W	R171	1-216-809-11	METAL CHIP 100 5%	1/16W
R110	1-216-797-11	METAL CHIP 10 5%	1/16W	R172	1-216-809-11	METAL CHIP 100 5%	1/16W
R112	1-216-833-11	METAL CHIP 10K 5%	1/16W	R173	1-216-809-11	METAL CHIP 100 5%	1/16W
R113	1-216-864-11	METAL CHIP 0 5%	1/16W	R174	1-216-809-11	METAL CHIP 100 5%	1/16W
R114	1-216-809-11	METAL CHIP 100 5%	1/16W	R175	1-216-809-11	METAL CHIP 100 5%	1/16W
				R176	1-216-809-11	METAL CHIP 100 5%	1/16W
				R177	1-216-809-11	METAL CHIP 100 5%	1/16W

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R178	1-216-809-11	METAL CHIP	100	5%	1/16W	R261	1-216-849-11	METAL CHIP	220K	5%	1/16W
R179	1-216-809-11	METAL CHIP	100	5%	1/16W	R262	1-216-809-11	METAL CHIP	100	5%	1/16W
R180	1-216-809-11	METAL CHIP	100	5%	1/16W						
R181	1-216-809-11	METAL CHIP	100	5%	1/16W	R263	1-216-821-11	METAL CHIP	1K	5%	1/16W
R201	1-216-805-11	METAL CHIP	47	5%	1/16W	R264	1-216-818-11	METAL CHIP	560	5%	1/16W
						R265	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R202	1-216-821-11	METAL CHIP	1K	5%	1/16W	R266	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R203	1-216-810-11	METAL CHIP	120	5%	1/16W	R269	1-216-837-11	METAL CHIP	22K	5%	1/16W
R204	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R205	1-216-837-11	METAL CHIP	22K	5%	1/16W	R270	1-216-864-11	METAL CHIP	0	5%	1/16W
R206	1-216-833-11	METAL CHIP	10K	5%	1/16W	R271	1-216-837-11	METAL CHIP	22K	5%	1/16W
						R272	1-216-821-11	METAL CHIP	1K	5%	1/16W
R207	1-216-821-11	METAL CHIP	1K	5%	1/16W	R273	1-216-819-11	METAL CHIP	680	5%	1/16W
R208	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R274	1-216-818-11	METAL CHIP	560	5%	1/16W
R209	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R210	1-216-821-11	METAL CHIP	1K	5%	1/16W	R275	1-216-809-11	METAL CHIP	100	5%	1/16W
R211	1-216-837-11	METAL CHIP	22K	5%	1/16W	R276	1-216-821-11	METAL CHIP	1K	5%	1/16W
						R277	1-216-864-11	METAL CHIP	0	5%	1/16W
R212	1-216-834-11	METAL CHIP	12K	5%	1/16W	R279	1-216-821-11	METAL CHIP	1K	5%	1/16W
R213	1-216-821-11	METAL CHIP	1K	5%	1/16W	R280	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R214	1-216-817-11	METAL CHIP	470	5%	1/16W						
R215	1-216-816-11	METAL CHIP	390	5%	1/16W	R281	1-216-817-11	METAL CHIP	470	5%	1/16W
R216	1-216-821-11	METAL CHIP	1K	5%	1/16W	R282	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R283	1-216-833-11	METAL CHIP	10K	5%	1/16W
R217	1-216-807-11	METAL CHIP	68	5%	1/16W	R284	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R218	1-216-837-11	METAL CHIP	22K	5%	1/16W	R285	1-216-864-11	METAL CHIP	0	5%	1/16W
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R220	1-216-821-11	METAL CHIP	1K	5%	1/16W	R287	1-218-879-11	RES, CHIP	22K	0.50%	1/16W
R221	1-216-817-11	METAL CHIP	470	5%	1/16W	R288	1-216-844-11	METAL CHIP	82K	5%	1/16W
						R289	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R222	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R290	1-218-869-11	RES, CHIP	8.2K	0.50%	1/16W
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W	R291	1-216-817-11	METAL CHIP	470	5%	1/16W
R224	1-216-841-11	METAL CHIP	47K	5%	1/16W						
R225	1-216-817-11	METAL CHIP	470	5%	1/16W	R292	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R226	1-216-809-11	METAL CHIP	100	5%	1/16W	R293	1-216-833-11	METAL CHIP	10K	5%	1/16W (DSR-20)
						R294	1-216-821-11	METAL CHIP	1K	5%	1/16W
R227	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R228	1-216-809-11	METAL CHIP	100	5%	1/16W	R295	1-216-853-11	METAL CHIP	470K	5%	1/16W
R229	1-216-821-11	METAL CHIP	1K	5%	1/16W	R296	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R231	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R297	1-216-819-11	METAL CHIP	680	5%	1/16W
R232	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R298	1-216-818-11	METAL CHIP	560	5%	1/16W
						R299	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R233	1-216-825-11	METAL CHIP	2.2K	5%	1/16W						
R234	1-216-809-11	METAL CHIP	100	5%	1/16W	R300	1-216-805-11	METAL CHIP	47	5%	1/16W
R235	1-216-845-11	METAL CHIP	100K	5%	1/16W	R301	1-216-815-11	METAL CHIP	330	5%	1/16W
R236	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R302	1-216-837-11	METAL CHIP	22K	5%	1/16W
R237	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R303	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)
R241	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)	R304	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20)
R242	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R244	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R305	1-216-819-11	METAL CHIP	680	5%	1/16W
						R306	1-216-811-11	METAL CHIP	150	5%	1/16W
R246	1-216-825-11	METAL CHIP	2.2K	5%	1/16W						
R248	1-216-813-11	METAL CHIP	220	5%	1/16W	R308	1-216-816-11	METAL CHIP	390	5%	1/16W
R249	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20)	R309	1-216-845-11	METAL CHIP	100K	5%	1/16W
						R310	1-216-837-11	METAL CHIP	22K	5%	1/16W
R250	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R311	1-216-837-11	METAL CHIP	22K	5%	1/16W
R251	1-216-813-11	METAL CHIP	220	5%	1/16W	R312	1-216-818-11	METAL CHIP	560	5%	1/16W
R252	1-216-825-11	METAL CHIP	2.2K	5%	1/16W						
R253	1-216-818-11	METAL CHIP	560	5%	1/16W	R313	1-216-821-11	METAL CHIP	1K	5%	1/16W
R254	1-218-863-11	RES, CHIP	4.7K	0.50%	1/16W	R314	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
						R315	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R255	1-218-707-11	RES, CHIP	4.3K	5%	1/16W	R316	1-216-821-11	METAL CHIP	1K	5%	1/16W
R256	1-218-269-11	RES, CHIP	360	5%	1/16W	R317	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R257	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20)						
						R318	1-216-837-11	METAL CHIP	22K	5%	1/16W
R258	1-218-823-11	RES, CHIP	100	0.50%	1/16W	R319	1-216-840-11	METAL CHIP	39K	5%	1/16W (DSR-20P)
R259	1-216-864-11	METAL CHIP	0	5%	1/16W						
R260	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R320	1-216-837-11	METAL CHIP	22K	5%	1/16W

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Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R321	1-216-839-11	METAL CHIP	33K	5%	1/16W	R452	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)
R323	1-216-818-11	METAL CHIP	560	5%	1/16W						
R324	1-216-809-11	METAL CHIP	100	5%	1/16W	R453	1-216-819-11	METAL CHIP	680	5%	1/16W
R325	1-216-817-11	METAL CHIP	470	5%	1/16W	R454	1-216-864-11	METAL CHIP	0	5%	1/16W
R326	1-216-821-11	METAL CHIP	1K	5%	1/16W	R458	1-216-864-11	METAL CHIP	0	5%	1/16W
						R459	1-216-864-11	METAL CHIP	0	5%	1/16W
R327	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R460	1-216-864-11	METAL CHIP	0	5%	1/16W
R328	1-216-839-11	METAL CHIP	33K	5%	1/16W (DSR-20P)						
R329	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R461	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)
R401	1-216-821-11	METAL CHIP	1K	5%	1/16W	R462	1-216-842-11	METAL CHIP	56K	5%	1/16W
R402	1-216-864-11	METAL CHIP	0	5%	1/16W	R463	1-216-833-11	METAL CHIP	10K	5%	1/16W
R404	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)	R464	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)
						R465	1-218-847-11	RES, CHIP	1K	0.50%	1/16W
R406	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)	R466	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R407	1-216-835-11	METAL CHIP	15K	5%	1/16W						
R408	1-216-833-11	METAL CHIP	10K	5%	1/16W	R467	1-216-841-11	METAL CHIP	47K	5%	1/16W
						R468	1-216-841-11	METAL CHIP	47K	5%	1/16W
R410	1-216-817-11	METAL CHIP	470	5%	1/16W	R469	1-216-839-11	METAL CHIP	33K	5%	1/16W
R411	1-216-864-11	METAL CHIP	0	5%	1/16W	R470	1-216-821-11	METAL CHIP	1K	5%	1/16W
R412	1-216-837-11	METAL CHIP	22K	5%	1/16W	R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R413	1-216-817-11	METAL CHIP	470	5%	1/16W						
R414	1-216-819-11	METAL CHIP	680	5%	1/16W	R472	1-216-864-11	METAL CHIP	0	5%	1/16W
						R473	1-216-821-11	METAL CHIP	1K	5%	1/16W
R415	1-216-864-11	METAL CHIP	0	5%	1/16W	R474	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R416	1-216-835-11	METAL CHIP	15K	5%	1/16W	R477	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W	R480	1-216-864-11	METAL CHIP	0	5%	1/16W
R418	1-216-835-11	METAL CHIP	15K	5%	1/16W						
R419	1-216-833-11	METAL CHIP	10K	5%	1/16W	R481	1-216-864-11	METAL CHIP	0	5%	1/16W
						R482	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)
R420	1-216-813-11	METAL CHIP	220	5%	1/16W	R484	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)
R421	1-216-828-11	METAL CHIP	3.9K	5%	1/16W						
R422	1-216-847-11	METAL CHIP	150K	5%	1/16W	R485	1-216-864-11	METAL CHIP	0	5%	1/16W
R423	1-216-864-11	METAL CHIP	0	5%	1/16W	R486	1-216-821-11	METAL CHIP	1K	5%	1/16W
R424	1-216-821-11	METAL CHIP	1K	5%	1/16W	R487	1-216-821-11	METAL CHIP	1K	5%	1/16W
						R488	1-216-833-11	METAL CHIP	10K	5%	1/16W
R425	1-216-817-11	METAL CHIP	470	5%	1/16W	R489	1-216-821-11	METAL CHIP	1K	5%	1/16W
R426	1-216-818-11	METAL CHIP	560	5%	1/16W						
R427	1-216-821-11	METAL CHIP	1K	5%	1/16W (DSR-20P)	R492	1-216-821-11	METAL CHIP	1K	5%	1/16W
						R493	1-216-833-11	METAL CHIP	10K	5%	1/16W
R428	1-216-821-11	METAL CHIP	1K	5%	1/16W	R494	1-216-022-00	METAL CHIP	75	5%	1/10W
R429	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	R495	1-216-833-11	METAL CHIP	10K	5%	1/16W
R430	1-216-833-11	METAL CHIP	10K	5%	1/16W	R496	1-216-841-11	METAL CHIP	47K	5%	1/16W
R431	1-216-825-11	METAL CHIP	2.2K	5%	1/16W						
R433	1-216-833-11	METAL CHIP	10K	5%	1/16W	R497	1-216-022-00	METAL CHIP	75	5%	1/10W
						R498	1-216-013-00	METAL CHIP	33	5%	1/10W
R434	1-216-821-11	METAL CHIP	1K	5%	1/16W (DSR-20P)	R499	1-216-833-11	METAL CHIP	10K	5%	1/16W
R436	1-216-817-11	METAL CHIP	470	5%	1/16W	R500	1-216-015-00	METAL CHIP	39	5%	1/10W
R437	1-216-821-11	METAL CHIP	1K	5%	1/16W	R501	1-216-817-11	METAL CHIP	470	5%	1/16W
R438	1-216-864-11	METAL CHIP	0	5%	1/16W	R502	1-216-845-11	METAL CHIP	100K	5%	1/16W
R439	1-216-837-11	METAL CHIP	22K	5%	1/16W	R503	1-216-821-11	METAL CHIP	1K	5%	1/16W
R440	1-216-821-11	METAL CHIP	1K	5%	1/16W	R504	1-216-864-11	METAL CHIP	0	5%	1/16W
R441	1-216-819-11	METAL CHIP	680	5%	1/16W	R505	1-216-845-11	METAL CHIP	100K	5%	1/16W
R442	1-216-837-11	METAL CHIP	22K	5%	1/16W	R506	1-216-864-11	METAL CHIP	0	5%	1/16W
R443	1-216-819-11	METAL CHIP	680	5%	1/16W	R507	1-216-845-11	METAL CHIP	100K	5%	1/16W
R444	1-216-837-11	METAL CHIP	22K	5%	1/16W	R508	1-216-845-11	METAL CHIP	100K	5%	1/16W
R445	1-218-838-11	RES, CHIP	430	0.50%	1/16W	R509	1-216-845-11	METAL CHIP	100K	5%	1/16W
R446	1-216-833-11	METAL CHIP	10K	5%	1/16W	R510	1-216-845-11	METAL CHIP	100K	5%	1/16W
R447	1-216-809-11	METAL CHIP	100	5%	1/16W	R511	1-216-845-11	METAL CHIP	100K	5%	1/16W
R449	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20P)	R512	1-216-864-11	METAL CHIP	0	5%	1/16W
R450	1-218-839-11	RES, CHIP	470	0.50%	1/16W	R513	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R451	1-218-846-11	RES, CHIP	910	0.50%	1/16W	R514	1-216-849-11	METAL CHIP	220K	5%	1/16W
						R517	1-216-864-11	METAL CHIP	0	5%	1/16W
						R519	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R520	1-216-833-11	METAL CHIP	10K	5%	1/16W	R665	1-216-817-11	METAL CHIP	470	5%	1/16W
R521	1-216-864-11	METAL CHIP	0	5%	1/16W	R666	1-216-864-11	METAL CHIP	0	5%	1/16W
R524	1-216-821-11	METAL CHIP	1K	5%	1/16W	R667	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R525	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R526	1-216-833-11	METAL CHIP	10K	5%	1/16W	R668	1-216-847-11	METAL CHIP	150K	5%	1/16W
						R669	1-216-818-11	METAL CHIP	560	5%	1/16W
R527	1-216-821-11	METAL CHIP	1K	5%	1/16W (DSR-20P)	R670	1-216-817-11	METAL CHIP	470	5%	1/16W
R528	1-216-864-11	METAL CHIP	0	5%	1/16W	R676	1-216-025-91	RES, CHIP	100	5%	1/10W
R529	1-216-864-11	METAL CHIP	0	5%	1/16W (DSR-20)	R677	1-216-025-91	RES, CHIP	100	5%	1/10W
R531	1-216-864-11	METAL CHIP	0	5%	1/16W	R678	1-216-021-00	METAL CHIP	68	5%	1/10W
R533	1-216-864-11	METAL CHIP	0	5%	1/16W	R679	1-216-864-11	METAL CHIP	0	5%	1/16W
R534	1-216-864-11	METAL CHIP	0	5%	1/16W	R680	1-216-864-11	METAL CHIP	0	5%	1/16W
R535	1-216-864-11	METAL CHIP	0	5%	1/16W	R681	1-216-864-11	METAL CHIP	0	5%	1/16W
R536	1-216-864-11	METAL CHIP	0	5%	1/16W	R682	1-216-864-11	METAL CHIP	0	5%	1/16W
R537	1-216-864-11	METAL CHIP	0	5%	1/16W	R683	1-216-864-11	METAL CHIP	0	5%	1/16W
R539	1-216-821-11	METAL CHIP	1K	5%	1/16W	R684	1-216-864-11	METAL CHIP	0	5%	1/16W
R540	1-216-864-11	METAL CHIP	0	5%	1/16W	R701	1-216-833-11	METAL CHIP	10K	5%	1/16W
R541	1-216-864-11	METAL CHIP	0	5%	1/16W	R702	1-216-833-11	METAL CHIP	10K	5%	1/16W
R542	1-216-864-11	METAL CHIP	0	5%	1/16W	R703	1-216-833-11	METAL CHIP	10K	5%	1/16W
R601	1-216-841-11	METAL CHIP	47K	5%	1/16W	R704	1-216-833-11	METAL CHIP	10K	5%	1/16W
R602	1-216-841-11	METAL CHIP	47K	5%	1/16W	R705	1-216-833-11	METAL CHIP	10K	5%	1/16W
R603	1-216-813-11	METAL CHIP	220	5%	1/16W	R706	1-216-833-11	METAL CHIP	10K	5%	1/16W
R604	1-216-849-11	METAL CHIP	220K	5%	1/16W	R707	1-216-833-11	METAL CHIP	10K	5%	1/16W
R605	1-216-837-11	METAL CHIP	22K	5%	1/16W	R708	1-216-833-11	METAL CHIP	10K	5%	1/16W
R606	1-216-839-11	METAL CHIP	33K	5%	1/16W	R709	1-216-849-11	METAL CHIP	220K	5%	1/16W
R610	1-216-817-11	METAL CHIP	470	5%	1/16W	R710	1-216-849-11	METAL CHIP	220K	5%	1/16W
R611	1-216-816-11	METAL CHIP	390	5%	1/16W	R711	1-216-839-11	METAL CHIP	33K	5%	1/16W
R612	1-216-821-11	METAL CHIP	1K	5%	1/16W	R712	1-216-839-11	METAL CHIP	33K	5%	1/16W
R613	1-216-817-11	METAL CHIP	470	5%	1/16W	R713	1-216-835-11	METAL CHIP	15K	5%	1/16W
R615	1-216-864-11	METAL CHIP	0	5%	1/16W	R714	1-216-835-11	METAL CHIP	15K	5%	1/16W
R616	1-216-821-11	METAL CHIP	1K	5%	1/16W	R715	1-216-839-11	METAL CHIP	33K	5%	1/16W
R618	1-216-850-11	METAL CHIP	270K	5%	1/16W	R716	1-216-839-11	METAL CHIP	33K	5%	1/16W
R619	1-216-815-11	METAL CHIP	330	5%	1/16W	R717	1-216-835-11	METAL CHIP	15K	5%	1/16W
R620	1-216-845-11	METAL CHIP	100K	5%	1/16W	R718	1-216-835-11	METAL CHIP	15K	5%	1/16W
R621	1-216-821-11	METAL CHIP	1K	5%	1/16W	R719	1-216-833-11	METAL CHIP	10K	5%	1/16W
R622	1-216-833-11	METAL CHIP	10K	5%	1/16W	R720	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R721	1-216-809-11	METAL CHIP	100	5%	1/16W
R623	1-216-853-11	METAL CHIP	470K	5%	1/16W	R722	1-216-841-11	METAL CHIP	47K	5%	1/16W
R629	1-216-833-11	METAL CHIP	10K	5%	1/16W	R723	1-216-837-11	METAL CHIP	22K	5%	1/16W
R630	1-216-836-11	METAL CHIP	18K	5%	1/16W						
R631	1-216-837-11	METAL CHIP	22K	5%	1/16W	R724	1-216-833-11	METAL CHIP	10K	5%	1/16W
R635	1-216-864-11	METAL CHIP	0	5%	1/16W	R725	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R726	1-216-809-11	METAL CHIP	100	5%	1/16W
R636	1-216-833-11	METAL CHIP	10K	5%	1/16W	R727	1-216-845-11	METAL CHIP	100K	5%	1/16W
R639	1-216-821-11	METAL CHIP	1K	5%	1/16W	R728	1-216-845-11	METAL CHIP	100K	5%	1/16W
R640	1-216-841-11	METAL CHIP	47K	5%	1/16W						
R641	1-216-841-11	METAL CHIP	47K	5%	1/16W	R729	1-216-845-11	METAL CHIP	100K	5%	1/16W
R642	1-216-821-11	METAL CHIP	1K	5%	1/16W	R730	1-216-845-11	METAL CHIP	100K	5%	1/16W
						R731	1-216-837-11	METAL CHIP	22K	5%	1/16W
R643	1-216-845-11	METAL CHIP	100K	5%	1/16W	R732	1-216-833-11	METAL CHIP	10K	5%	1/16W
R652	1-216-821-11	METAL CHIP	1K	5%	1/16W	R733	1-216-833-11	METAL CHIP	10K	5%	1/16W
R653	1-216-864-11	METAL CHIP	0	5%	1/16W						
R654	1-216-864-11	METAL CHIP	0	5%	1/16W	R734	1-216-841-11	METAL CHIP	47K	5%	1/16W
R657	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	R735	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R736	1-216-833-11	METAL CHIP	10K	5%	1/16W
R658	1-216-834-11	METAL CHIP	12K	5%	1/16W	R737	1-216-833-11	METAL CHIP	10K	5%	1/16W
R659	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R738	1-216-833-11	METAL CHIP	10K	5%	1/16W
R660	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R661	1-216-833-11	METAL CHIP	10K	5%	1/16W	R739	1-216-819-11	METAL CHIP	680	5%	1/16W
R662	1-216-821-11	METAL CHIP	1K	5%	1/16W	R740	1-216-819-11	METAL CHIP	680	5%	1/16W
						R741	1-216-833-11	METAL CHIP	10K	5%	1/16W
R663	1-216-835-11	METAL CHIP	15K	5%	1/16W	R742	1-216-833-11	METAL CHIP	10K	5%	1/16W
R664	1-216-839-11	METAL CHIP	33K	5%	1/16W	R743	1-216-841-11	METAL CHIP	47K	5%	1/16W
						R744	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R745	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R746	1-216-841-11	METAL CHIP	47K	5%	1/16W
R747	1-216-833-11	METAL CHIP	10K	5%	1/16W
R748	1-216-833-11	METAL CHIP	10K	5%	1/16W
R749	1-216-833-11	METAL CHIP	10K	5%	1/16W
R750	1-216-833-11	METAL CHIP	10K	5%	1/16W
R753	1-218-332-11	RES, CHIP	130K	5%	1/16W
R754	1-218-332-11	RES, CHIP	130K	5%	1/16W
R755	1-216-833-11	METAL CHIP	10K	5%	1/16W
R756	1-218-293-11	RES, CHIP	24K	5%	1/16W
R757	1-218-293-11	RES, CHIP	24K	5%	1/16W
R758	1-216-833-11	METAL CHIP	10K	5%	1/16W
R759	1-216-841-11	METAL CHIP	47K	5%	1/16W
R760	1-218-332-11	RES, CHIP	130K	5%	1/16W
R761	1-218-332-11	RES, CHIP	130K	5%	1/16W
R762	1-216-841-11	METAL CHIP	47K	5%	1/16W
R763	1-216-833-11	METAL CHIP	10K	5%	1/16W
R764	1-216-849-11	METAL CHIP	220K	5%	1/16W
R765	1-216-833-11	METAL CHIP	10K	5%	1/16W
R766	1-218-882-11	RES, CHIP	30K	0.50%	1/16W
R767	1-216-833-11	METAL CHIP	10K	5%	1/16W
R768	1-216-833-11	METAL CHIP	10K	5%	1/16W
R769	1-216-833-11	METAL CHIP	10K	5%	1/16W
R770	1-216-833-11	METAL CHIP	10K	5%	1/16W
R771	1-216-833-11	METAL CHIP	10K	5%	1/16W
R772	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R773	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R774	1-216-833-11	METAL CHIP	10K	5%	1/16W
R775	1-216-809-11	METAL CHIP	100	5%	1/16W
R776	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R777	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R778	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R779	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R780	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R781	1-216-849-11	METAL CHIP	220K	5%	1/16W
R782	1-216-809-11	METAL CHIP	100	5%	1/16W
R783	1-218-290-11	RES, CHIP	6.2K	5%	1/16W
R784	1-218-290-11	RES, CHIP	6.2K	5%	1/16W
R785	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R786	1-218-882-11	RES, CHIP	30K	0.50%	1/16W
R787	1-216-833-11	METAL CHIP	10K	5%	1/16W
R788	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R789	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R790	1-216-809-11	METAL CHIP	100	5%	1/16W
R791	1-216-809-11	METAL CHIP	100	5%	1/16W
R792	1-216-840-11	METAL CHIP	39K	5%	1/16W
R793	1-216-809-11	METAL CHIP	100	5%	1/16W
R794	1-216-833-11	METAL CHIP	10K	5%	1/16W
R795	1-216-840-11	METAL CHIP	39K	5%	1/16W
R796	1-216-809-11	METAL CHIP	100	5%	1/16W
R797	1-216-821-11	METAL CHIP	1K	5%	1/16W
R798	1-216-821-11	METAL CHIP	1K	5%	1/16W
R799	1-216-821-11	METAL CHIP	1K	5%	1/16W
R800	1-216-813-11	METAL CHIP	220	5%	1/16W
R801	1-216-813-11	METAL CHIP	220	5%	1/16W
R802	1-216-813-11	METAL CHIP	220	5%	1/16W
R803	1-216-813-11	METAL CHIP	220	5%	1/16W
R804	1-216-840-11	METAL CHIP	39K	5%	1/16W
R805	1-216-840-11	METAL CHIP	39K	5%	1/16W
R807	1-216-864-11	METAL CHIP	0	5%	1/16W
R808	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description			Remark
R809	1-216-833-11	METAL CHIP	10K	5%	1/16W
R810	1-216-833-11	METAL CHIP	10K	5%	1/16W
R811	1-216-833-11	METAL CHIP	10K	5%	1/16W
R812	1-216-833-11	METAL CHIP	10K	5%	1/16W
R813	1-216-833-11	METAL CHIP	10K	5%	1/16W
R814	1-216-833-11	METAL CHIP	10K	5%	1/16W
R815	1-216-864-11	METAL CHIP	0	5%	1/16W
R832	1-216-801-11	METAL CHIP	22	5%	1/16W
R854	1-216-801-11	METAL CHIP	22	5%	1/16W
R855	1-216-841-11	METAL CHIP	47K	5%	1/16W
R856	1-216-817-11	METAL CHIP	470	5%	1/16W
R857	1-216-841-11	METAL CHIP	47K	5%	1/16W
R858	1-216-833-11	METAL CHIP	10K	5%	1/16W
R859	1-216-833-11	METAL CHIP	10K	5%	1/16W
R860	1-216-833-11	METAL CHIP	10K	5%	1/16W
R861	1-216-833-11	METAL CHIP	10K	5%	1/16W
R862	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R863	1-216-817-11	METAL CHIP	470	5%	1/16W
R864	1-216-817-11	METAL CHIP	470	5%	1/16W
R865	1-216-821-11	METAL CHIP	1K	5%	1/16W
R866	1-216-864-11	METAL CHIP	0	5%	1/16W
R867	1-216-817-11	METAL CHIP	470	5%	1/16W
R868	1-216-817-11	METAL CHIP	470	5%	1/16W
R869	1-216-817-11	METAL CHIP	470	5%	1/16W
R870	1-216-817-11	METAL CHIP	470	5%	1/16W
R871	1-216-817-11	METAL CHIP	470	5%	1/16W
R872	1-216-817-11	METAL CHIP	470	5%	1/16W
R873	1-216-817-11	METAL CHIP	470	5%	1/16W
R874	1-216-817-11	METAL CHIP	470	5%	1/16W
R875	1-216-817-11	METAL CHIP	470	5%	1/16W
R876	1-216-817-11	METAL CHIP	470	5%	1/16W
R877	1-216-817-11	METAL CHIP	470	5%	1/16W
R878	1-216-817-11	METAL CHIP	470	5%	1/16W
R879	1-216-817-11	METAL CHIP	470	5%	1/16W
R880	1-216-817-11	METAL CHIP	470	5%	1/16W
R881	1-216-817-11	METAL CHIP	470	5%	1/16W
R882	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R883	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R884	1-216-833-11	METAL CHIP	10K	5%	1/16W
R885	1-216-817-11	METAL CHIP	470	5%	1/16W
R886	1-216-833-11	METAL CHIP	10K	5%	1/16W
R887	1-216-817-11	METAL CHIP	470	5%	1/16W
R888	1-216-864-11	METAL CHIP	0	5%	1/16W
R889	1-216-817-11	METAL CHIP	470	5%	1/16W
R890	1-216-864-11	METAL CHIP	0	5%	1/16W
R891	1-216-817-11	METAL CHIP	470	5%	1/16W
R892	1-216-833-11	METAL CHIP	10K	5%	1/16W
R893	1-216-864-11	METAL CHIP	0	5%	1/16W
R894	1-216-833-11	METAL CHIP	10K	5%	1/16W
R895	1-216-864-11	METAL CHIP	0	5%	1/16W
R896	1-216-817-11	METAL CHIP	470	5%	1/16W
R897	1-216-833-11	METAL CHIP	10K	5%	1/16W
R898	1-216-864-11	METAL CHIP	0	5%	1/16W
R899	1-216-817-11	METAL CHIP	470	5%	1/16W
R900	1-216-833-11	METAL CHIP	10K	5%	1/16W
R901	1-216-833-11	METAL CHIP	10K	5%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R903	1-216-817-11	METAL CHIP	470	5%	1/16W
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W
R905	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R906	1-216-864-11	METAL CHIP	0	5%	1/16W	R973	1-216-841-11	METAL CHIP	47K	5%	1/16W
R907	1-216-833-11	METAL CHIP	10K	5%	1/16W	R974	1-216-841-11	METAL CHIP	47K	5%	1/16W
R908	1-216-864-11	METAL CHIP	0	5%	1/16W	R975	1-216-841-11	METAL CHIP	47K	5%	1/16W
R909	1-216-817-11	METAL CHIP	470	5%	1/16W	R976	1-216-817-11	METAL CHIP	470	5%	1/16W
R910	1-216-817-11	METAL CHIP	470	5%	1/16W	R977	1-216-154-00	RES, CHIP	15	5%	1/8W
R911	1-216-833-11	METAL CHIP	10K	5%	1/16W	R978	1-216-154-00	RES, CHIP	15	5%	1/8W
R912	1-216-817-11	METAL CHIP	470	5%	1/16W	R979	1-216-844-11	METAL CHIP	82K	5%	1/16W
R913	1-216-833-11	METAL CHIP	10K	5%	1/16W	R980	1-216-841-11	METAL CHIP	47K	5%	1/16W
R914	1-216-841-11	METAL CHIP	47K	5%	1/16W	R981	1-216-841-11	METAL CHIP	47K	5%	1/16W
R915	1-216-817-11	METAL CHIP	470	5%	1/16W	R982	1-219-570-11	RES, CHIP	10M	5%	1/16W
R916	1-216-833-11	METAL CHIP	10K	5%	1/16W	R983	1-216-864-11	METAL CHIP	0	5%	1/16W
R917	1-216-817-11	METAL CHIP	470	5%	1/16W	R985	1-216-837-11	METAL CHIP	22K	5%	1/16W
R918	1-216-833-11	METAL CHIP	10K	5%	1/16W	R986	1-216-833-11	METAL CHIP	10K	5%	1/16W
R919	1-216-845-11	METAL CHIP	100K	5%	1/16W	R987	1-216-833-11	METAL CHIP	10K	5%	1/16W
R920	1-216-841-11	METAL CHIP	47K	5%	1/16W	R988	1-216-817-11	METAL CHIP	470	5%	1/16W
R921	1-216-817-11	METAL CHIP	470	5%	1/16W	R989	1-216-864-11	METAL CHIP	0	5%	1/16W
R922	1-216-833-11	METAL CHIP	10K	5%	1/16W	R992	1-216-817-11	METAL CHIP	470	5%	1/16W
R923	1-216-841-11	METAL CHIP	47K	5%	1/16W	R993	1-216-845-11	METAL CHIP	100K	5%	1/16W
R924	1-216-833-11	METAL CHIP	10K	5%	1/16W	R994	1-216-817-11	METAL CHIP	470	5%	1/16W
R927	1-216-817-11	METAL CHIP	470	5%	1/16W	R995	1-216-833-11	METAL CHIP	10K	5%	1/16W
R928	1-216-864-11	METAL CHIP	0	5%	1/16W	R996	1-216-817-11	METAL CHIP	470	5%	1/16W
R930	1-216-864-11	METAL CHIP	0	5%	1/16W	R997	1-216-817-11	METAL CHIP	470	5%	1/16W
R931	1-216-864-11	METAL CHIP	0	5%	1/16W	R998	1-216-864-11	METAL CHIP	0	5%	1/16W
R932	1-216-864-11	METAL CHIP	0	5%	1/16W	R999	1-216-864-11	METAL CHIP	0	5%	1/16W
R933	1-216-864-11	METAL CHIP	0	5%	1/16W	R1001	1-216-817-11	METAL CHIP	470	5%	1/16W
R934	1-216-864-11	METAL CHIP	0	5%	1/16W	R1002	1-216-817-11	METAL CHIP	470	5%	1/16W
R935	1-216-864-11	METAL CHIP	0	5%	1/16W	R1003	1-216-817-11	METAL CHIP	470	5%	1/16W
R936	1-216-864-11	METAL CHIP	0	5%	1/16W	R1005	1-216-817-11	METAL CHIP	470	5%	1/16W
R937	1-216-864-11	METAL CHIP	0	5%	1/16W	R1027	1-216-817-11	METAL CHIP	470	5%	1/16W
R938	1-216-864-11	METAL CHIP	0	5%	1/16W	R1028	1-216-817-11	METAL CHIP	470	5%	1/16W
R940	1-216-864-11	METAL CHIP	0	5%	1/16W	R1029	1-216-027-00	METAL CHIP	120	5%	1/10W
R941	1-216-821-11	METAL CHIP	1K	5%	1/16W	R1030	1-216-025-91	RES, CHIP	100	5%	1/10W
R942	1-216-844-11	METAL CHIP	82K	5%	1/16W	R1031	1-216-166-00	RES, CHIP	47	5%	1/8W
R943	1-216-841-11	METAL CHIP	47K	5%	1/16W	R1032	1-216-166-00	RES, CHIP	47	5%	1/8W
R944	1-216-853-11	METAL CHIP	470K	5%	1/16W	< VARIABLE RESISTOR >					
R946	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	RV201	1-238-853-11	RES, ADJ, CERMET 1K			
R948	1-216-170-00	RES, CHIP	68	5%	1/8W	RV202	1-238-853-11	RES, ADJ, CERMET 1K			
R949	1-216-170-00	RES, CHIP	68	5%	1/8W	RV203	1-238-853-11	RES, ADJ, CERMET 1K			
R950	1-216-833-11	METAL CHIP	10K	5%	1/16W	RV204	1-238-852-11	RES, ADJ, CERMET 470			
R951	1-216-037-00	METAL CHIP	330	5%	1/10W	RV205	1-238-852-11	RES, ADJ, CERMET 470			
R952	1-216-170-00	RES, CHIP	68	5%	1/8W	RV206	1-238-852-11	RES, ADJ, CERMET 470			
R953	1-216-170-00	RES, CHIP	68	5%	1/8W	RV207	1-238-855-11	RES, ADJ, CERMET 4.7K			
R955	1-216-170-00	RES, CHIP	68	5%	1/8W	RV401	1-238-853-11	RES, ADJ, CERMET 1K			
R956	1-216-170-00	RES, CHIP	68	5%	1/8W	RV402	1-238-853-11	RES, ADJ, CERMET 1K (DSR-20P)			
R957	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	RV404	1-238-853-11	RES, ADJ, CERMET 1K			
R958	1-216-801-11	METAL CHIP	22	5%	1/16W	RV406	1-238-853-11	RES, ADJ, CERMET 1K			
R959	1-218-867-11	RES, CHIP	6.8K	0.50%	1/16W	< SWITCH >					
R960	1-218-871-11	RES, CHIP	10K	0.50%	1/16W	S852	1-570-909-11	SWITCH, TACTIL (REFLOW TYPE)			
R961	1-216-864-11	METAL CHIP	0	15%	1/16W	< TEST PIN >					
R962	1-216-817-11	METAL CHIP	470	5%	1/16W	TP201	1-535-757-11	CHIP, CHECKER			
R963	1-216-833-11	METAL CHIP	10K	5%	1/16W	TP401	1-535-757-11	CHIP, CHECKER			
R964	1-216-864-11	METAL CHIP	0	5%	1/16W	TP857	1-535-757-11	CHIP, CHECKER			
(DSR-20P)						TP859	1-535-757-11	CHIP, CHECKER			
R965	1-216-817-11	METAL CHIP	470	5%	1/16W	TP860	1-535-757-11	CHIP, CHECKER			
R966	1-216-864-11	METAL CHIP	0	5%	1/16W						
R967	1-216-864-11	METAL CHIP	0	5%	1/16W						
R968	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R969	1-216-817-11	METAL CHIP	470	5%	1/16W						
R970	1-216-864-11	METAL CHIP	0	5%	1/16W						
R972	1-216-805-11	METAL CHIP	47	5%	1/16W						

VA-102

Ref. No.	Part No.	Description	Remark
		< VIBRATOR >	
X051	1-579-125-11	VIBRATOR, CERAMIC (8MHz)	
X052	1-767-879-11	VIBRATOR, CERAMIC (1.228MHz)	
X201	1-579-738-21	VIBRATOR, CRYSTAL (14.318182MHz)	
		(DSR-20)	
X201	1-579-780-21	VIBRATOR, CRYSTAL (17.734475MHz)	
		(DSR-20P)	
X401	1-577-165-11	VIBLATOR, CERAMIC (500kHz)	
X402	1-567-900-11	OSCILLATOR, CRYSTAL (14.31818MHz)	
		(DSR-20)	
X402	1-567-733-11	VIBRATOR, CRYSTAL (17.734475MHz)	
		(DSR-20P)	
X403	1-579-738-21	VIBRATOR, CRYSTAL (14.318182MHz)	
		(DSR-20)	
X403	1-579-780-21	VIBRATOR, CRYSTAL (17.734475MHz)	
		(DSR-20P)	
* X601	1-579-466-11	VIBRATOR, CRYSTAL (3.58MHz) (DSR-20)	
X601	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz) (DSR-20P)	
X651	1-567-900-11	OSCILLATOR, CRYSTAL (14.31818MHz)	
		(DSR-20)	
X651	1-567-733-11	VIBRATOR, CRYSTAL (17.734475MHz)	
		(DSR-20P)	
X652	1-577-165-11	VIBLATOR, CERAMIC (500kHz)	
X851	1-767-450-11	VIBRATOR, CERAMIC (20MHz)	
X852	1-760-458-21	VIBRATOR, CRYSTAL (0.032798MHz)	
X853	1-760-458-21	VIBRATOR, CRYSTAL (0.032798MHz)	

MISCELLANEOUS

55	1-782-823-11	CABLE, FLAT (FVH-4)	
56	1-782-825-11	CABLE, FLAT (FVF-8)	
57	1-782-824-11	CABLE, FLAT (FVJ-7)	
△ 58	1-468-290-11	POWER BLOCK (U-1/U-2) (DSR-20)	
△ 58	1-468-291-11	POWER BLOCK (U-1/U-2)(DSR-20P)	
60	1-782-822-11	CABLE, FLAT (FVR-9)	
62	1-782-826-11	CABLE, FLAT (FVR-10)	
65	1-958-841-11	HARNESS (DP-73)	
△ 67	1-958-585-12	HARNESS (AC-227)	
68	1-958-059-11	HARNESS (VP-72)	
70	1-958-813-11	HARNESS (DH-50)	
101	1-776-148-11	CABLE, FLAT (FCM-11) 15P	
102	1-776-145-11	CABLE, FLAT (FCM-8) 16P	
105	1-764-137-11	CONNECTOR, TRANSLATION 15P	
113	1-958-288-11	HARNESS (CM-130)	
114	1-776-151-11	CABLE, FLAT (FCM-12) 14P	
115	1-776-147-11	CABLE, FLAT (FCM-10) 15P	
116	1-776-146-11	CABLE, FLAT (FCM-9) 9P	
117	1-958-057-11	HARNESS (CP-79)	
118	1-958-061-11	HARNESS (VJ-103)	
119	1-958-058-11	HARNESS (JP-55)	
120	1-958-060-11	HARNESS (VJ-102)	
121	1-543-793-11	FILTER, CLAMP(FERRITE CORE)	
851	1-658-990-11	FP-406 FLEXIBLE BOARD	
CN002	1-565-388-21	CONNECTOR, D-SUB 9P	
CN901	1-770-312-21	CONNECTOR 4P	
J901	1-564-603-41	CONNECTOR (WITH) 4P	
M901	A-7044-015-A	DRUM ASSY (DEH-08B-R)	

Ref. No.	Part No.	Description	Remark
M902	8-835-545-01	MOTOR, DC SCD11A/J-N (CAPSTAN)	
M903	X-3945-784-1	MOTOR ASSY, LM (LOADING)	
M904	8-835-537-01	MOTOR, DC SRD11A/J-N (REEL)	
M905	1-698-534-31	FAN, DC	
S001	1-762-550-11	SWITCH, ROTARY (MODE)	
S901	1-762-551-11	SWITCH, PUSH (REC PROOF)	
S902	1-572-288-11	SWITCH, PUSH (C IN SW)	

ACCESSORIES & PACKING MATERIALS

	1-475-693-11	REMOTE COMMANDER (RMT-DS20)	
△	1-551-812-11	CORD, POWER (DSR-20)	
△	1-782-929-11	CORD, POWER SUPPLY (BS 3P) (DSR-20P)	
	3-861-406-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	
	3-861-406-21	MANUAL, INSTRUCTION (GERMAN, ITALIAN)	
		(DSR-20P)	
	3-988-821-11	MANUAL, PROTOCOL	

HARDWARE LIST

#1	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
#2	7-682-552-09	SCREW +P 3X16
#3	7-627-556-78	SCREW, PRECISION +P 2.6X6 TYPE1
#4	7-685-132-19	SCREW +P 2.6X5 TYPE2 NON-SLIT
#5	7-685-146-11	SCREW +P 3X8 TYPE2 NON-SLIT
#6	7-628-253-20	SCREW +PS 2X6
#7	7-682-646-09	SCREW +PS 3X5
#8	7-628-253-00	SCREW +PS 2X4
#9	7-627-553-37	SCREW (M2X3), SPECIAL HEAD
#10	7-685-871-01	SCREW +BVTT 3X6 (S TIGHT)

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

DSR-20/20P

RMT-DS20

SONY




SERVICE MANUAL

US Model
Canadian Model
DSR-20
AEP Model
DSR-20P

CORRECTION-1

Please correct your service manual.

Subject : Adjustments correct

-  : Points added portion.
 : Points deleted portion.
 : Points changed portion.

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENT (Service manual Page 5-63)

5. Modification of C, D, E, Page Data

If the C, D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note: If copy the data built in the different model, this set may not operate.

- 3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses the initial value. If not, change the data to the initial value.
- 5) After completing "Modification of C, D, E, F Page Data", select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3-5-3. VA-102 Board Adjustment (Service Manual Page 5-79)

9. REC CR Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑩ of CN102 (CL143)
Measuring Instrument	Oscilloscope
Adjustment Element	RV204
Specified Value	A=1.25±0.02 V (NTSC) A=1.20±0.02 V (PAL)

Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the CR signal level (A) to the specified value using RV204.

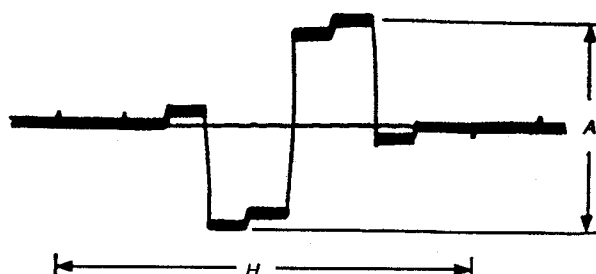


Fig. 5-3-21.

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENT (Service Manual Page 5-64)

6. Page D Address List

Note 1: Fixed data 1: Initialized data.
Fixed data 2: Modified data.

Address	Initial Value	Remark
00 to 0F		
10 to 12	Fixed data 1 (Initial data)	
13	Fixed data 2 (Changed data. Read from same model and copy it.)	
14	Fixed data 1 (Initial data)	
15 to 18	Fixed data 2 (Changed data. Read from same model and copy it.)	
19	Fixed data 1 (Initial data)	
1A to 1E	Fixed data 1 (Initial data)	
1F	Fixed data 2 (Changed data. Read from same model and copy it.)	
20 to 29	Fixed data 1 (Initial data)	
2A, 2B	Fixed data 1 (Initial data)	
2C to 2F	Fixed data 2 (Changed data. Read from same model and copy it.)	
30 to 32	Fixed data 1 (Initial data)	
33	59	IC422 27 MHz XTAL fo adjustment
34	19	Playback CR signal level adjustment/ Encoder R-Y input level adjustment
35	37	Playback CB signal level adjustment/ Encoder B-Y input level adjustment
36	18	Playback Y signal level adjustment/ Y output level adjustment
37 to 39	Fixed data 1 (Initial data)	
3A to 3F	Fixed data 1 (Initial data)	
40	Fixed data 1 (Initial data)	
41	00	Playback burst level adjustment
42	Fixed data 2 (Changed data. Read from same model and copy it.)	
43	Fixed data 1 (Initial data)	
44 to 46	Fixed data 2 (Changed data. Read from same model and copy it.)	
47 to 49	Fixed data 1 (Initial data)	
4A	Fixed data 2 (Changed data. Read from same model and copy it.)	
4B to 4F	Fixed data 1 (Initial data)	

Table 5-2-3.

3-5-5. BIST Check (Service Manual Page 5-85)

2. Record System Check

Note: Perform "Record System Check" successively (with BIST check tape in playback status.)

1) Enter the following data.


Note: Press the PAUSE button each time the data is set.

Page	Address	Data
4	41	01
4	0F	02
4	0E	01
4	40	01
4	0F	0A
4	40	00
4	40	01
4	0F	0E
4	40	00
4	40	01
4	0F	8E
4	40	00

- 2) With the HOLD switch on adjusting remote commander turned ON, eject the BIST check tape, and insert a record tape instead.
3) Set the REC mode.

IC401 (U1) Record System Check

- 4) Set data: 08 to page: 4, address: 11, and press the PAUSE button.
5) Set data: 01 to page: 4, address: 42, and press the PAUSE button.
6) Set data: 07 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
7) Set data: 00 to page: 4, address: 42, and press the PAUSE button.
8) Set data: 00 to page: 4, address: 11, and press the PAUSE button.
9) If IC401 (U1) → IC411 (D1) record system is normal, the following data are displayed on page: 4, address: 16, 17.

Page	Address	Data
4	17	05 
4	16	80



SP00724

DSR-20/20P

RMT-DS20

SONY

SERVICE MANUAL

US Model
Canadian Model
DSR-20
AEP Model
DSR-20P

SUPPLEMENT-1

File this supplement with the service manual.

(EV800095)

- Change of the end number of the board.
- Addition of battery down adjustment.

- FR-136 board: the end number of the board has been changed from **-11** to **-12**, **-13**.

Note: board with the end number **-12** has no change.

Please refer to the printed wiring board with the end number **-11**.

- VA-102 board: the end number of the board has been changed from **-11** to **-12**, **-13**.

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

 : Points changed parts.

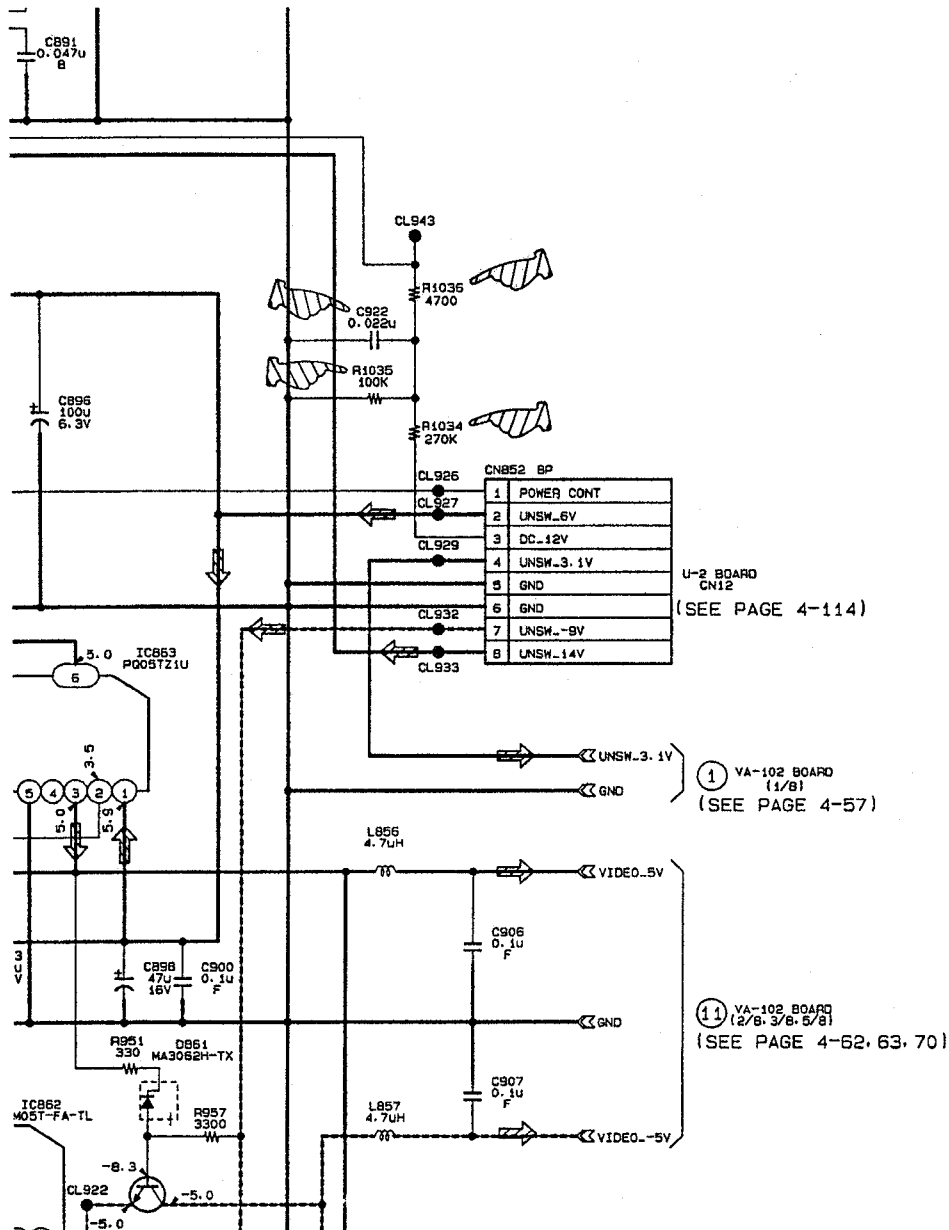
VA-102 (HI-MICOM) SCHEMATIC DIAGRAM

- Ref. No.: VA-102 board; 1,000 series -

(Service Manual Page 4-76)
(Location E - K, 20 - 24)

• Part No. 1-669-381-12

-11 → -12



**VA-102 (IF, VIDEO IN/OUT, UVIC, DV IN/OUT, MONITOR OUT,
AUDIO, HI MICOM, RS MICOM) PRINTED WIRING BOARD**

- Ref. No.: VA-102 board; 1,000 series -

• Part No. 1-669-381-12

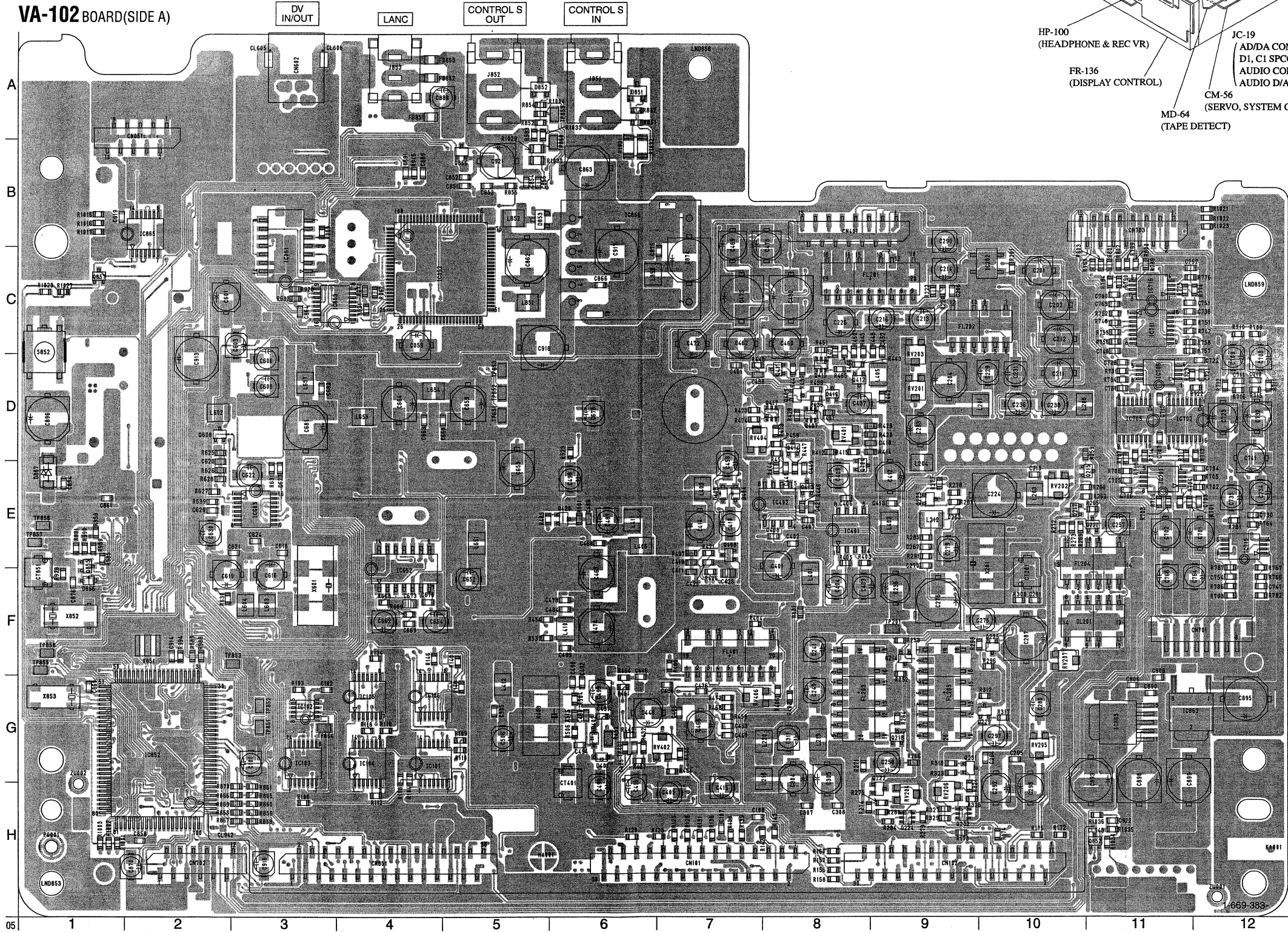
VA-102 BOARD (SIDE A)

CN051 A-2
CN101 H-7
CN102 H-9
CN401 B-8
CN602 A-3
CN701 F-11
CN702 H-2
CN703 B-11
CN851 H-4

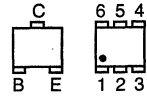
D401 G-6
D403 E-7
D404 E-7
D851 A-6
D852 A-5
D853 B-5
D866 E-1
D867 D-1

IC051 B-3
IC052 B-4
IC101 G-4
IC102 G-3
IC103 G-3
IC104 G-4
IC105 F-4
IC106 F-4
IC202 C-9
IC401 E-8
IC402 E-7
IC652 E-4
IC701 D-11
IC702 D-11
IC703 D-11
IC706 D-11
IC711 C-11
IC715 E-12
IC716 C-11
IC852 G-2
IC853 C-3
IC856 B-6
IC862 G-11
IC863 G-10
IC865 B-2

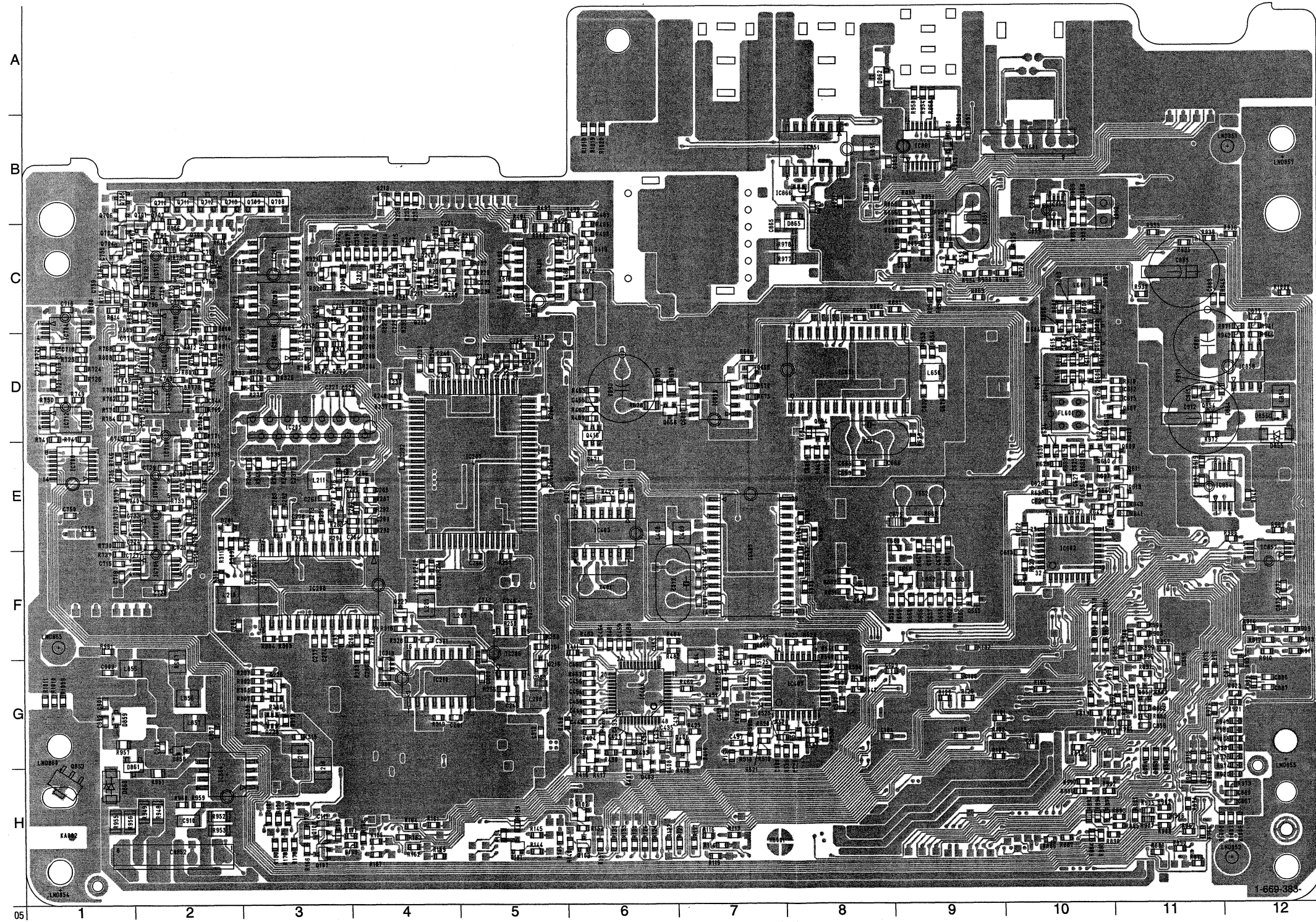
Q214 F-9
Q215 D-10
Q217 E-10
Q218 G-8
Q221 E-10
Q222 G-8
Q223 E-9
Q224 H-9
Q225 F-9
Q229 G-9
Q231 G-9
Q232 H-9
Q404 D-8
Q407 D-8
Q408 E-7
Q409 D-8
Q410 D-8
Q411 C-7
Q412 D-8
Q413 E-8
Q414 D-8
Q415 C-8
Q417 D-7
Q420 E-5
Q852 H-10
Q855 E-1
Q856 B-5
Q857 C-1



- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



VA-102 BOARD(SIDE B)



VA-102 BOARD (SIDE B)

CN601	B-9	Q211	C-4
CN852	H-2	Q212	C-4
		Q213	B-4
D051	C-9	Q216	F-5
D052	C-9	Q226	F-3
D201	E-2	Q227	F-4
D855	D-12	Q228	G-3
D856	D-12	Q233	D-2
D858	G-2	Q403	G-6
D859	G-1	Q405	G-6
D861	G-1	Q406	G-6
D862	A-8	Q416	D-6
D863	G-1	Q419	C-5
D864	D-11	Q601	C-10
		Q602	C-10
IC053	B-10	Q604	C-10
IC201	C-3	Q605	C-10
IC203	C-3	Q606	D-10
IC204	C-3	Q607	D-10
IC205	D-3	Q613	E-10
IC206	F-5	Q651	F-8
IC207	D-4	Q653	F-8
IC208	F-3	Q654	D-8
IC403	E-6	Q655	F-9
IC404	F-6	Q656	D-7
IC405	E-7	Q658	D-6
IC406	C-5	Q701	B-2
IC407	F-7	Q702	B-1
IC602	E-10	Q703	C-2
IC651	D-8	Q704	C-1
IC653	D-7	Q705	B-1
IC704	C-1	Q706	B-1
IC705	E-2	Q707	B-2
IC707	E-2	Q708	B-3
IC708	E-1	Q709	B-3
IC709	E-2	Q710	B-2
IC710	D-2	Q711	B-2
IC712	D-1	Q712	B-2
IC713	D-2	Q713	B-2
IC714	D-2	Q851	G-10
IC717	C-2	Q853	G-1
IC718	C-2	Q854	D-11
IC851	B-8		
IC854	E-11		
IC857	E-12		
IC858	D-11		
IC861	B-8		
IC864	G-2		
IC866	B-7		
Q101	H-5		
Q102	H-5		
Q103	H-5		
Q107	H-3		
Q108	H-3		
Q201	C-3		
Q202	D-3		
Q203	D-3		
Q204	C-4		
Q205	C-4		
Q206	C-3		
Q207	C-4		
Q208	C-4		
Q209	C-4		
Q210	C-4		

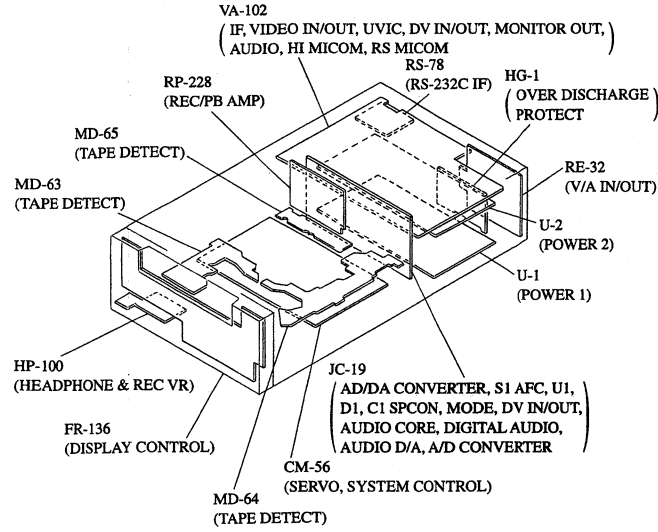
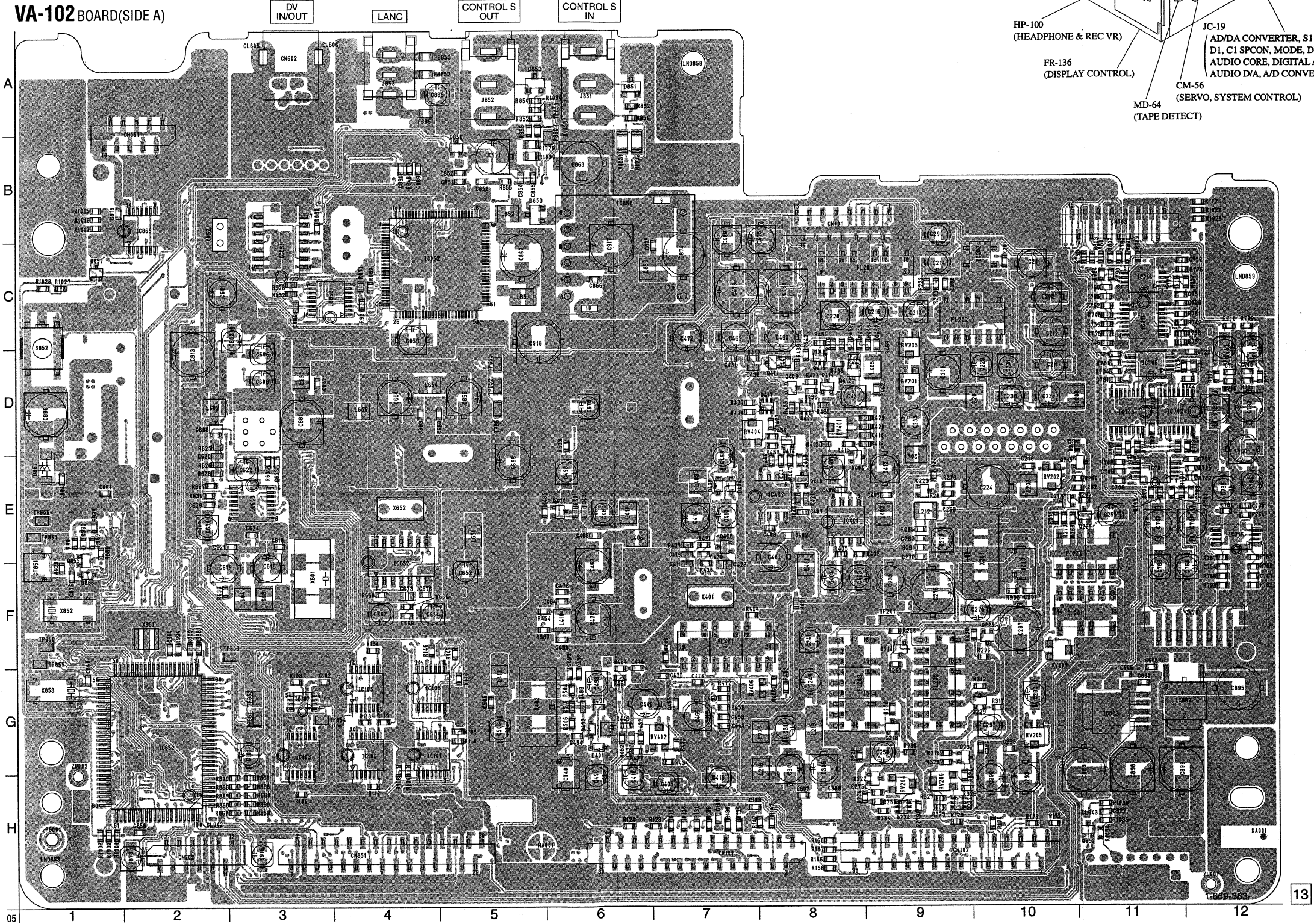
VA-102 (IF, VIDEO IN/OUT, UVIC, DV IN/OUT, MONITOR OUT,
AUDIO, HI MICOM, RS MICOM) PRINTED WIRING BOARD

- Ref. No.: VA-102 board; 1,000 series -

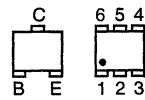
• Part No. 1-669-381-13

VA-102 BOARD (SIDE A)

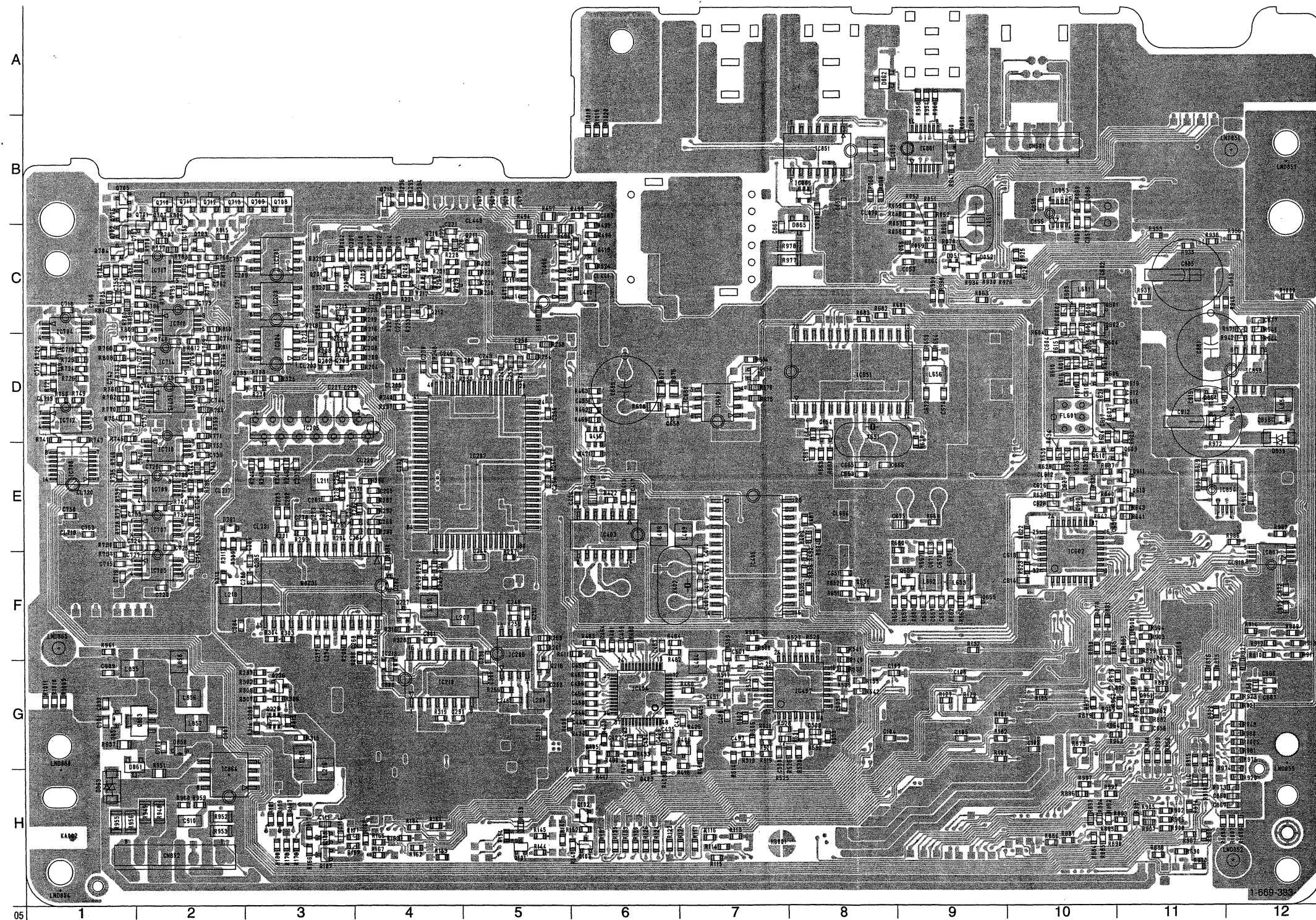
CN051	A-2
CN101	H-7
CN102	H-9
CN401	B-8
CN602	A-3
CN701	F-11
CN702	H-2
CN703	B-11
CN851	H-4
D401	G-6
D403	E-7
D404	E-7
D851	A-6
D852	A-5
D853	B-5
D866	E-1
D867	D-1
IC051	B-3
IC052	B-4
IC101	G-4
IC102	G-3
IC103	G-3
IC104	G-4
IC105	F-4
IC106	F-4
IC202	C-9
IC401	E-8
IC402	E-7
IC652	E-4
IC701	D-11
IC702	D-11
IC703	D-11
IC706	D-11
IC711	C-11
IC715	E-12
IC716	C-11
IC852	G-2
IC853	C-3
IC856	B-6
IC862	G-11
IC863	G-10
IC865	B-2
Q214	F-9
Q215	D-10
Q217	E-10
Q218	G-8
Q221	E-10
Q222	G-8
Q223	E-9
Q224	H-9
Q225	F-9
Q229	G-9
Q231	G-9
Q232	H-9
Q404	D-8
Q407	D-8
Q408	E-7
Q409	D-8
Q410	D-8
Q411	C-7
Q412	D-8
Q413	E-8
Q414	D-8
Q415	C-8
Q417	D-7
Q420	E-5
Q852	H-10
Q855	E-1
Q856	B-5
Q857	C-1



- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



VA-102 BOARD(SIDE B)



VA-102 BOARD (SIDE B)

CN601	B-9	Q211	C-4
CN852	H-2	Q212	C-4
		Q213	B-4
D051	C-9	Q216	F-5
D052	C-9	Q226	F-3
D201	E-2	Q227	F-4
D855	D-12	Q228	G-3
D856	D-12	Q233	D-2
D858	G-2	Q403	G-6
D859	G-1	Q405	G-6
D861	G-1	Q406	G-6
D862	A-8	Q416	D-6
D863	G-1	Q419	C-5
D864	D-11	Q601	C-10
		Q602	C-10
IC053	B-10	Q604	C-10
IC201	C-3	Q605	C-10
IC203	C-3	Q606	D-10
IC204	C-3	Q607	D-10
IC205	D-3	Q613	E-10
IC206	F-5	Q651	F-8
IC207	D-4	Q653	F-8
IC208	F-3	Q654	D-8
IC403	E-6	Q655	F-9
IC404	F-6	Q656	D-7
IC405	E-7	Q658	D-6
IC406	C-5	Q701	B-2
IC407	F-7	Q702	B-1
IC602	E-10	Q703	C-2
IC651	D-8	Q704	C-1
IC653	D-7	Q705	B-1
IC704	C-1	Q706	B-1
IC705	E-2	Q707	B-2
IC707	E-2	Q708	B-3
IC708	E-1	Q709	B-3
IC709	E-2	Q710	B-2
IC710	D-2	Q711	B-2
IC712	D-1	Q712	B-2
IC713	D-2	Q713	B-2
IC714	D-2	Q851	G-10
IC717	C-2	Q853	G-1
IC718	C-2	Q854	D-11
IC851	B-8		
IC854	E-11		
IC857	E-12		
IC858	D-11		
IC861	B-8		
IC864	G-2		
IC866	B-7		
Q101	H-5		
Q102	H-5		
Q103	H-5		
Q107	H-3		
Q108	H-3		
Q201	C-3		
Q202	D-3		
Q203	D-3		
Q204	C-4		
Q205	C-4		
Q206	C-3		
Q207	C-4		
Q208	C-4		
Q209	C-4		
Q210	C-4		

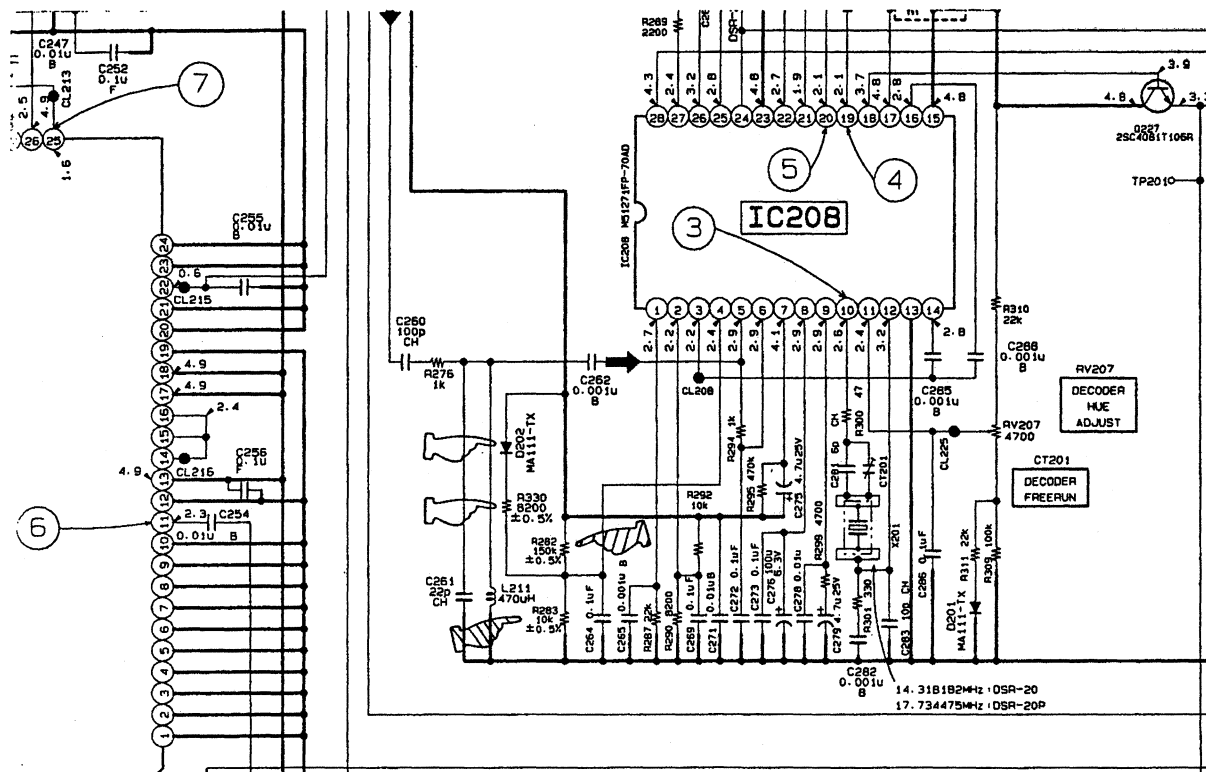
 : Points added parts.
 : Points changed parts.

VA-102 (VIDEO IN) SCHEMATIC DIAGRAM

(Service Manual Page 4-61)
(Location I - L, 11 -17)

– Ref. No.: VA-102 board; 1,000 series –

• Part No. 1-669-381-13

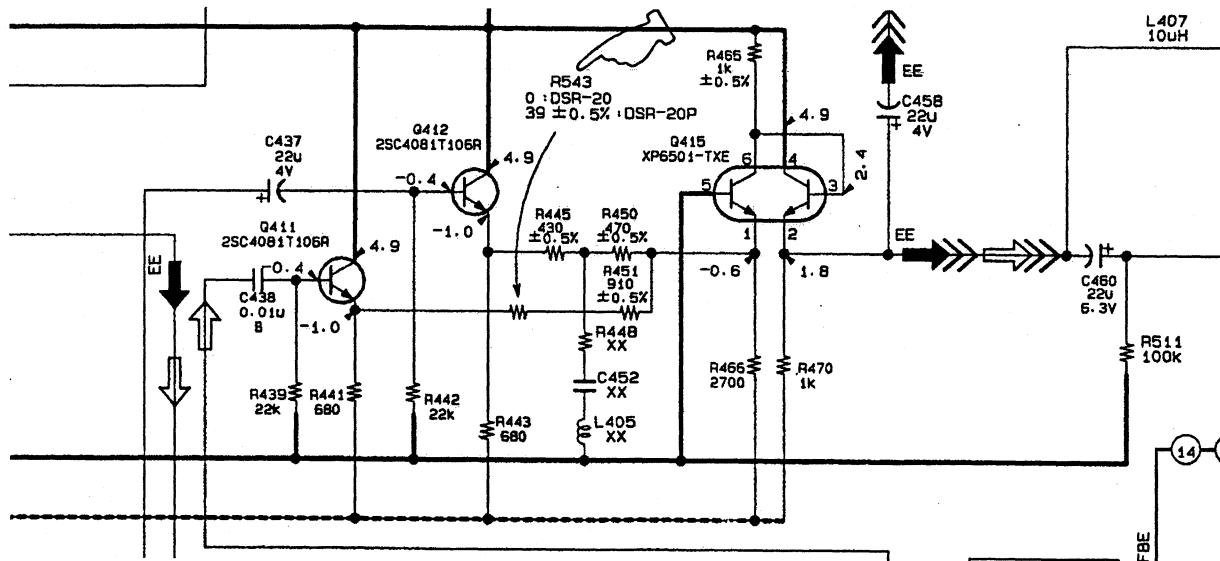
$$\boxed{-12} \rightarrow \boxed{-13}$$


VA-102 (VIDEO OUT) SCHEMATIC DIAGRAM

(Service Manual Page 4-64)
(Location K – M, 10 –14)

– Ref. No.: VA-102 board; 1,000 series –

• Part No. 1-669-381-13

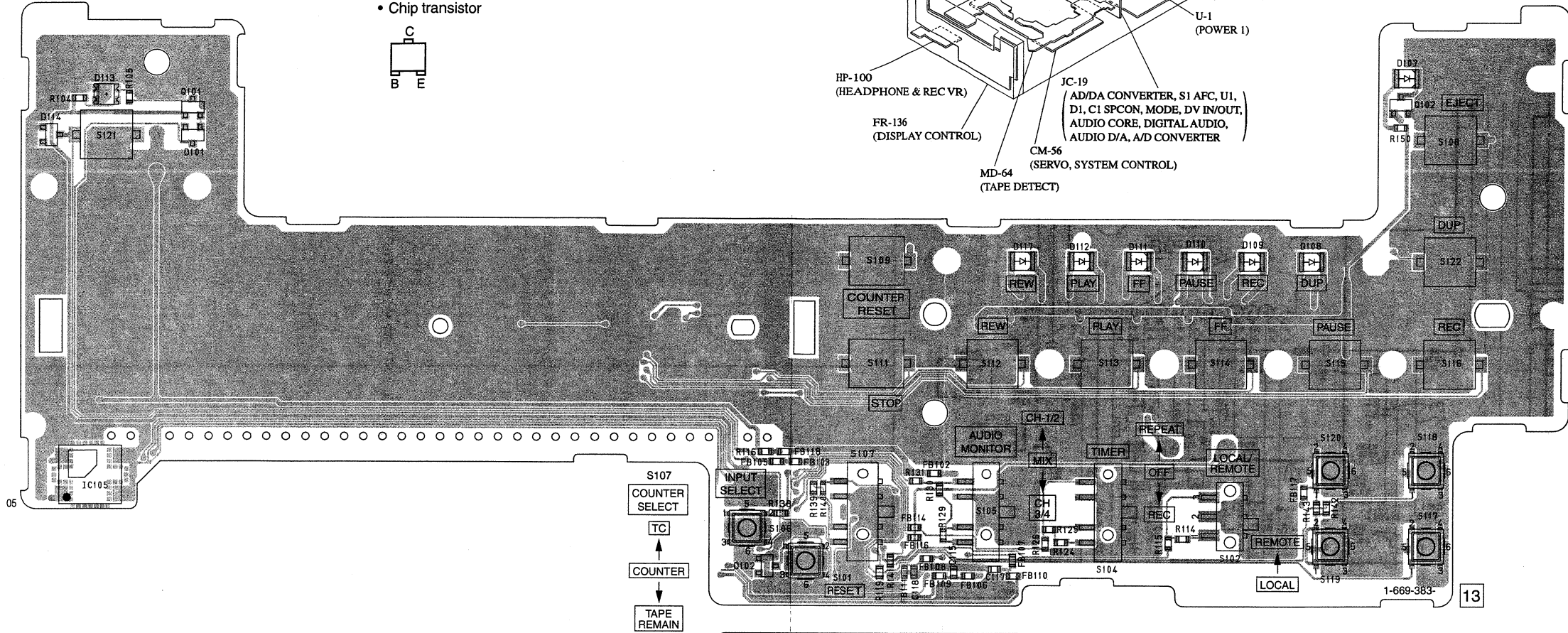
$$\boxed{-12} \rightarrow \boxed{-13}$$


FR-136 (DISPLAY CONTROL) PRINTED WIRING BOARD

– Ref. No.: FR-136 board; 5,000 series –

- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor

FR-136 BOARD(SIDE A)



SECTION 5 ADJUSTMENTS

5-3. VIDEO SECTION ADJUSTMENTS

3-5. VIDEO SYSTEM ADJUSTMENTS

3-5-4. General Adjustments

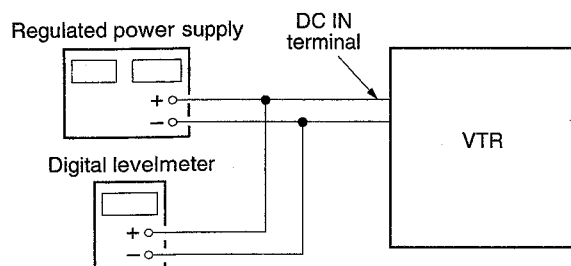
5. Battery Down Adjustment and Confirmation

Mode	Stop
Signal	Any
Test point	Displayed data on page 5, address 2A (LCD display of the adjustment remote commander)
Measuring tool	Adjusting remote commander
Adjustment page	E
Adjustment address	1D, 1E, 1F

Note 1: Make sure that the BEEP on the Menu screen is set to "ON".

Connection of Equipment:

Connect a regulated power supply and a digital voltmeter to the DC IN terminal.



Adjustment Method:

- 1) Adjust the output voltage of regulated power supply so that a digital voltmeter displays 11.0 ± 0.05 V.
- 2) Select page: 5 address: 2A, and read displayed data on the adjusting remote commander, and assume it as D_0 .
- 3) Set D_0 to page: E address: 1D, and press the PAUSE button on the adjusting remote commander.
- 4) Convert " D_0 " read in 2) to decimal notation, and obtain D_0' .
- 5) Calculate D_1' , D_2' using the following equations (decimal notation calculation).

$$D_1' = D_0' - 6$$

$$D_2' = D_0' - 12$$
- 6) Convert D_1' to hexadecimal notation, and obtain D_1 .
- 7) Set D_1 to page: E address: 1E, and press the PAUSE button on the adjusting remote commander.
- 8) Convert D_2' to hexadecimal notation, and obtain D_2 .
- 9) Set D_2 to page: E address: 1F, and press the PAUSE button on the adjusting remote commander.
- 10) Confirm the display and operation of the fluorescent display tube, when the voltage input from DC IN terminal is lowered from 12 V.

Input of DC 12 V : Normal operation
 Input of DC 10.8 V : Beep sounds and "dc Lo" is displayed.
 Input of DC 10.3 V : Beep sounds and the standby mode is activated after 2 seconds.
- 11) Further lower the voltage, and check the voltage when STBY indicator (red LED) turns off.

Specification: The power relay must turns off when $V_{dc} = 9.0 \text{ V} - 9.5 \text{ V}$.
- 12) On the contrary, raise the voltage, and check the voltage when STBY indicator (red LED) turns on.

Specification: The power relay must turns on when $V_{dc} = 10.5 \text{ V} - 11.0 \text{ V}$.

SECTION 6 REPAIR PARTS LIST

• DIFFERENT PARTS LIST

6-2. ELECTRICAL PARTS LIST

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Page	-11				-12			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
6-24	*	A-7073-470-A	RE-32 BOARD, COMPLETE		*	A-7073-470-A	RE-32 BOARD, COMPLETE	
6-25	D115	8-719-108-12	DIODE RD9.1EW		D115	8-719-421-59	DIODE MA3130WA-TX	

• VA-102 Board: Part No. 1-669-381-12

Page	-11							-12						
	Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
6-30	*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)					*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)				
	*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)					*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)				
6-32	C617	1-216-829-11	METAL CHIP	4.7K	5%	1/16W		C617						
6-33	C922							C922	1-164-227-11	CERAMIC	0.022uF	10%	25V	
	C999	1-161-055-00	CERAMIC	0.022uF	10%	50V		C999						
6-34	IC857	8-759-489-27	IC S-3513AEFS-TB					IC857	8-759-538-14	IC S-3513BEFS-TB				
6-39	R618	1-216-850-11	METAL CHIP	270K	5%	1/16W		R618						
	R620	1-216-845-11	METAL CHIP	170K	5%	1/16W		R620						
6-41	R1034							R1034	1-216-850-11	METAL CHIP	270K	5%	1/16W	
	R1035							R1035	1-216-845-11	METAL CHIP	170K	5%	1/16W	
	R1036							R1036	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	

• VA-102 Board: Part No. 1-669-381-13

Page	-12							-13						
	Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
6-30	*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)					*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)				
	*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)					*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)				
6-34	D202							D202	8-719-404-49	DIODE MA111				
6-37	R282	1-216-833-11	METAL CHIP	10K	5%	1/16W		R282	1-218-899-11	RES, CHIP	150K	0.5%	1/16W	
	R283	1-216-833-11	METAL CHIP	10K	5%	1/16W		R283	1-216-871-11	METAL CHIP	10K	0.5%	1/16W	
6-38	R330							R330	1-218-869-11	RES, CHIP	8.2K	0.5%	1/16W	
6-39	R543							R543	1-216-864-11	METAL CHIP	0	5%	1/16W	(DSR-20)
								R543	1-211-983-11	METAL CHIP	39	0.5%	1/16W	(DSR-20P)

DSR-20/20P

RMT-DS20

SONY

SERVICE MANUAL

US Model
Canadian Model
DSR-20
AEP Model
DSR-20P

SUPPLEMENT-1

File this supplement with the service manual.

(EV800095)

- Change of the end number of the board.
- Addition of battery down adjustment.

- FR-136 board: the end number of the board has been changed from **-11** to **-12**, **-13**.

Note: board with the end number **-12** has no change.
Please refer to the printed wiring board with the end number **-11**.

- VA-102 board: the end number of the board has been changed from **-11** to **-12**, **-13**.

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

 : Points changed parts.

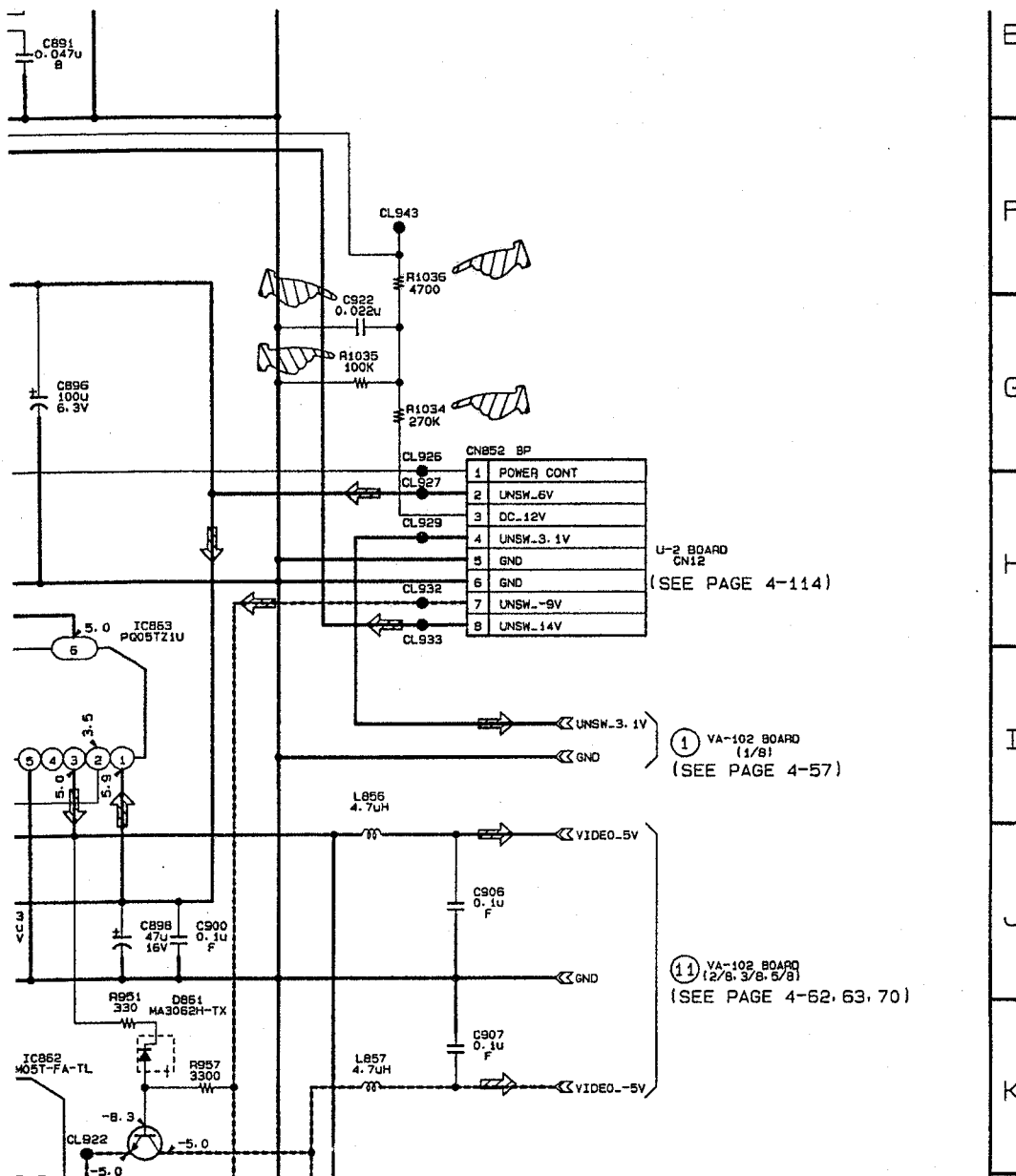
VA-102 (HI-MICOM) SCHEMATIC DIAGRAM

– Ref. No.: VA-102 board; 1,000 series –

(Service Manual Page 4-76)
(Location E – K, 20 – 24)

• Part No. 1-669-381-12

11 → 12

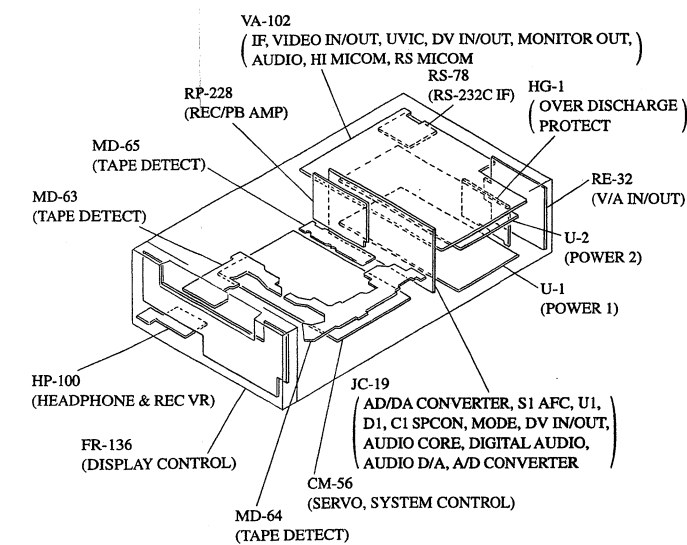
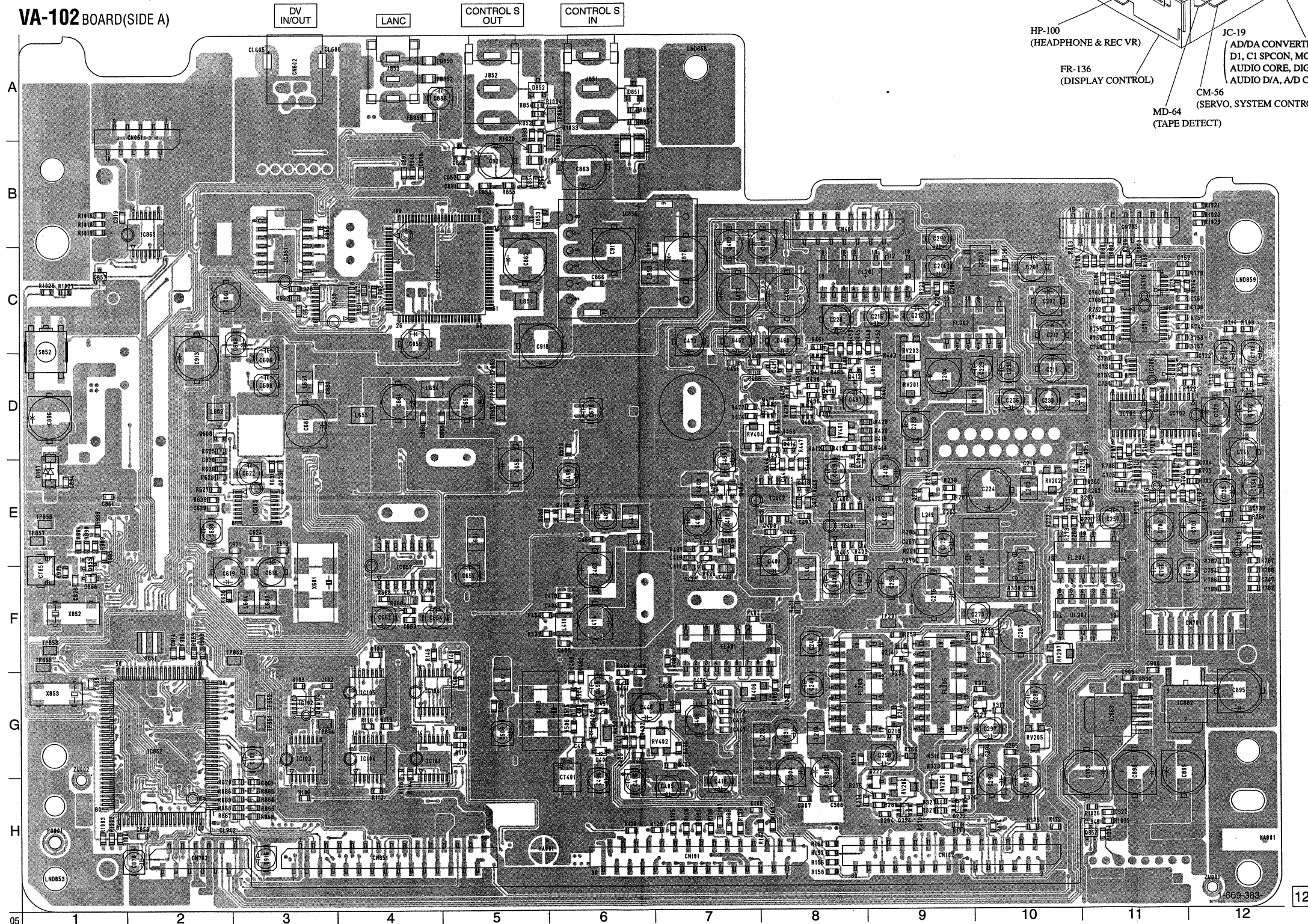


**VA-102 (IF, VIDEO IN/OUT, UVIC, DV IN/OUT, MONITOR OUT,
AUDIO, HI MICOM, RS MICOM) PRINTED WIRING BOARD**
- Ref. No.: VA-102 board; 1,000 series -

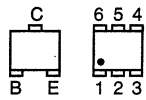
• Part No. 1-669-381-12

VA-102 BOARD (SIDE A)

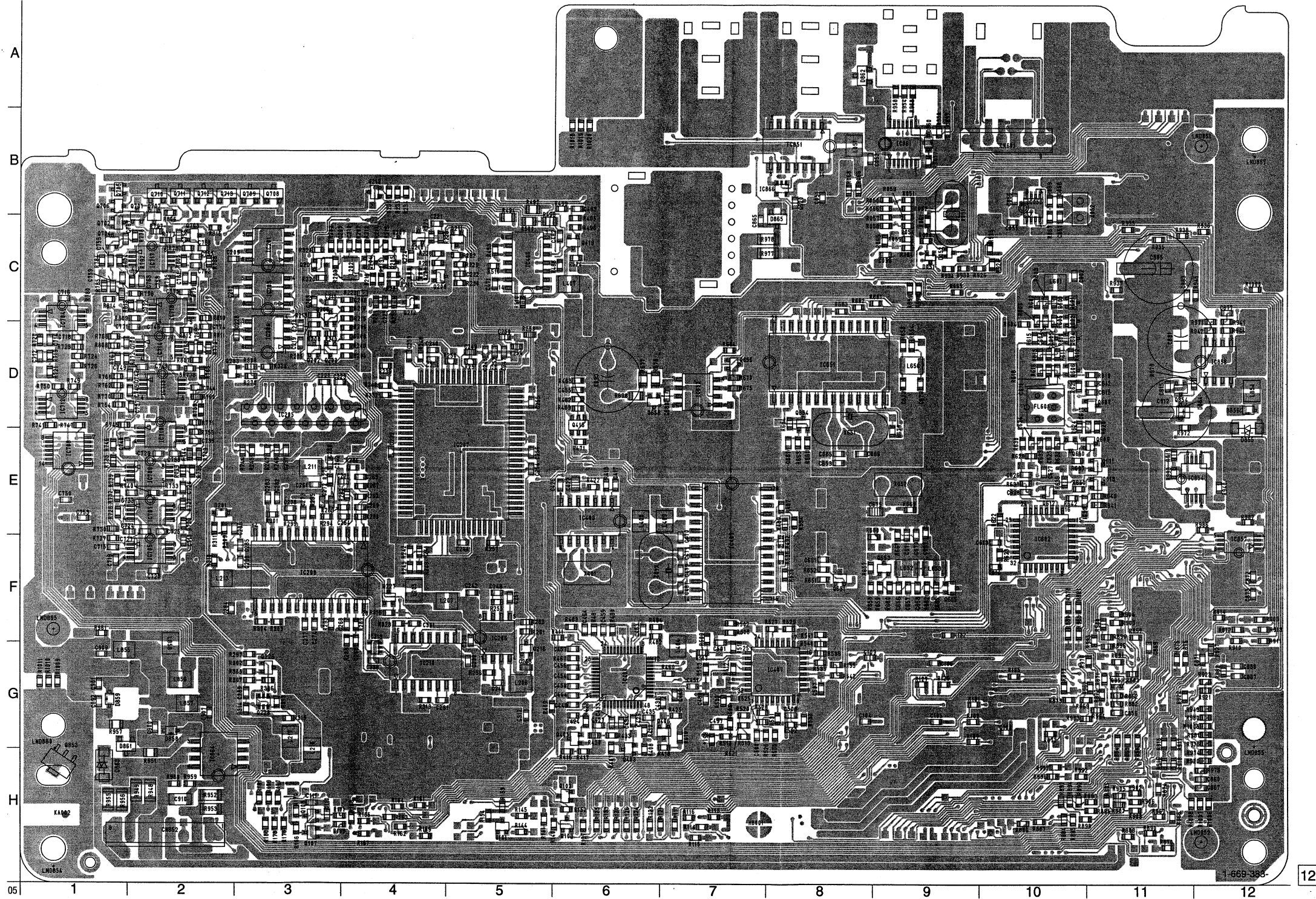
CN051	A-2
CN101	H-7
CN102	H-9
CN401	B-8
CN602	A-3
CN701	F-11
CN702	H-2
CN703	B-11
CN851	H-4
D401	G-6
D403	E-7
D404	E-7
D851	A-6
D852	A-5
D853	B-5
D866	E-1
D867	D-1
IC051	B-3
IC052	B-4
IC101	G-4
IC102	G-3
IC103	G-3
IC104	G-4
IC105	F-4
IC106	F-4
IC202	C-9
IC401	E-8
IC402	E-7
IC652	E-4
IC701	D-11
IC702	D-11
IC703	D-11
IC706	D-11
IC711	C-11
IC715	E-12
IC716	C-11
IC852	G-2
IC853	C-3
IC856	B-6
IC862	G-11
IC863	G-10
IC865	B-2
Q214	F-9
Q215	D-10
Q217	E-10
Q218	G-8
Q221	E-10
Q222	G-8
Q223	E-9
Q224	H-9
Q225	F-9
Q229	G-9
Q231	G-9
Q232	H-9
Q404	D-8
Q407	D-8
Q408	E-7
Q409	D-8
Q410	D-8
Q411	C-7
Q412	D-8
Q413	E-8
Q414	D-8
Q415	C-8
Q417	D-7
Q420	E-5
Q852	H-10
Q855	E-1
Q856	B-5
Q857	C-1



- For Printed Wiring Board.
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



VA-102 BOARD(SIDE B)



VA-102 BOARD (SIDE B)

CN601	B-9	Q211	C-4
CN852	H-2	Q212	C-4
		Q213	B-4
D051	C-9	Q216	F-5
D052	C-9	Q226	F-3
D201	E-2	Q227	F-4
D855	D-12	Q228	G-3
D856	D-12	Q233	D-2
D858	G-2	Q403	G-6
D859	G-1	Q405	G-6
D861	G-1	Q406	G-6
D862	A-8	Q416	D-6
D863	G-1	Q419	C-5
D864	D-11	Q801	C-10
		Q802	C-10
IC053	B-10	Q804	C-10
IC201	C-3	Q605	C-10
IC203	C-3	Q606	D-10
IC204	C-3	Q607	D-10
IC205	D-3	Q613	E-10
IC206	F-5	Q651	F-8
IC207	D-4	Q653	F-8
IC208	F-3	Q654	D-8
IC403	E-6	Q655	F-9
IC404	F-6	Q656	D-7
IC405	E-7	Q658	D-6
IC406	C-5	Q701	B-2
IC407	F-7	Q702	B-1
IC602	E-10	Q703	C-2
IC651	D-8	Q704	C-1
IC653	D-7	Q705	B-1
IC704	C-1	Q706	B-1
IC705	E-2	Q707	B-2
IC707	E-2	Q708	B-3
IC708	E-1	Q709	B-3
IC709	E-2	Q710	B-2
IC710	D-2	Q711	B-2
IC712	D-1	Q712	B-2
IC713	D-2	Q713	B-2
IC714	D-2	Q851	G-10
IC717	C-2	Q853	G-1
IC718	C-2	Q854	D-11
IC851	B-8		
IC854	E-11		
IC857	E-12		
IC858	D-11		
IC861	B-8		
IC864	G-2		
IC866	B-7		
Q101	H-5		
Q102	H-5		
Q103	H-5		
Q107	H-3		
Q108	H-3		
Q201	C-3		
Q202	D-3		
Q203	D-3		
Q204	C-4		
Q205	C-4		
Q206	C-3		
Q207	C-4		
Q208	C-4		
Q209	C-4		
Q210	C-4		

VA-102 (IF, VIDEO IN/OUT, UVIC, DV IN/OUT, MONITOR OUT, AUDIO, HI MICOM, RS MICOM) PRINTED WIRING BOARD

- Ref. No.: VA-102 board; 1,000 series -

• Part No. 1-669-381-13

VA-102 BOARD (SIDE A)

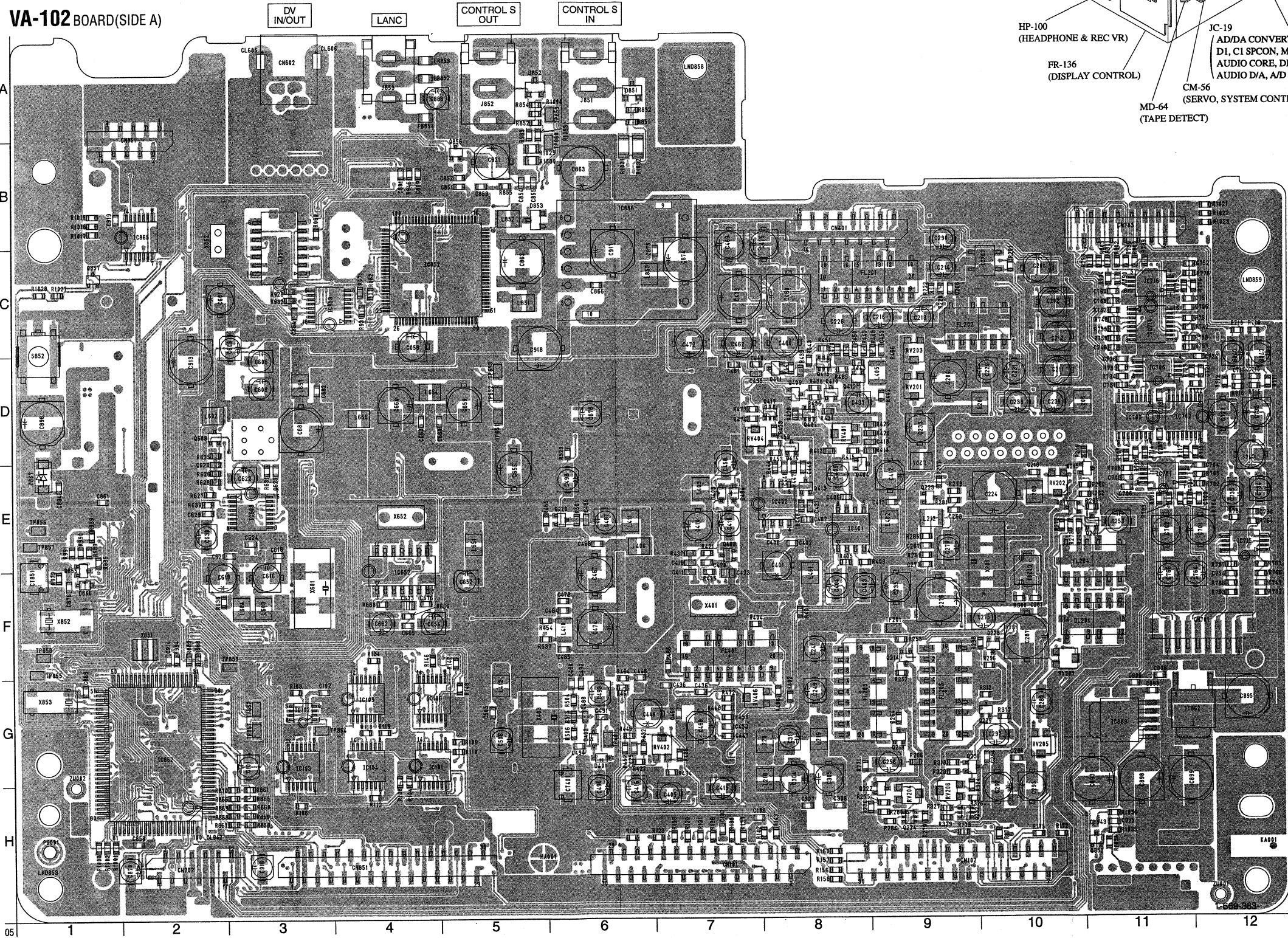
CN051 A-2
CN101 H-7
CN102 H-9
CN401 B-8
CN602 A-3
CN701 F-11
CN702 H-2
CN703 B-11
CN851 H-4

D401 G-6
D403 E-7
D404 E-7
D851 A-6
D852 A-5
D853 B-5
D866 E-1
D867 D-1

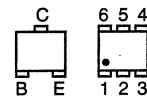
IC051 B-3
IC052 B-4
IC101 G-4
IC102 G-3
IC103 G-3
IC104 G-4
IC105 F-4
IC106 F-4
IC202 C-9
IC401 E-8
IC402 E-7
IC652 E-4
IC701 D-11
IC702 D-11
IC703 D-11
IC706 D-11
IC711 C-11
IC715 E-12
IC716 C-11
IC852 G-2
IC853 C-3
IC856 B-6
IC862 G-11
IC863 G-10
IC865 B-2

Q214 F-9
Q215 D-10
Q217 E-10
Q218 G-8
Q221 E-10
Q222 G-8
Q223 E-9
Q224 H-9
Q225 F-9
Q229 G-9
Q231 G-9
Q232 H-9
Q404 D-8
Q407 D-8
Q408 E-7
Q409 D-8
Q410 D-8
Q411 C-7
Q412 D-8
Q413 E-8
Q414 D-8
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Q417 D-7
Q420 E-5
Q852 H-10
Q855 E-1
Q856 B-5
Q857 C-1

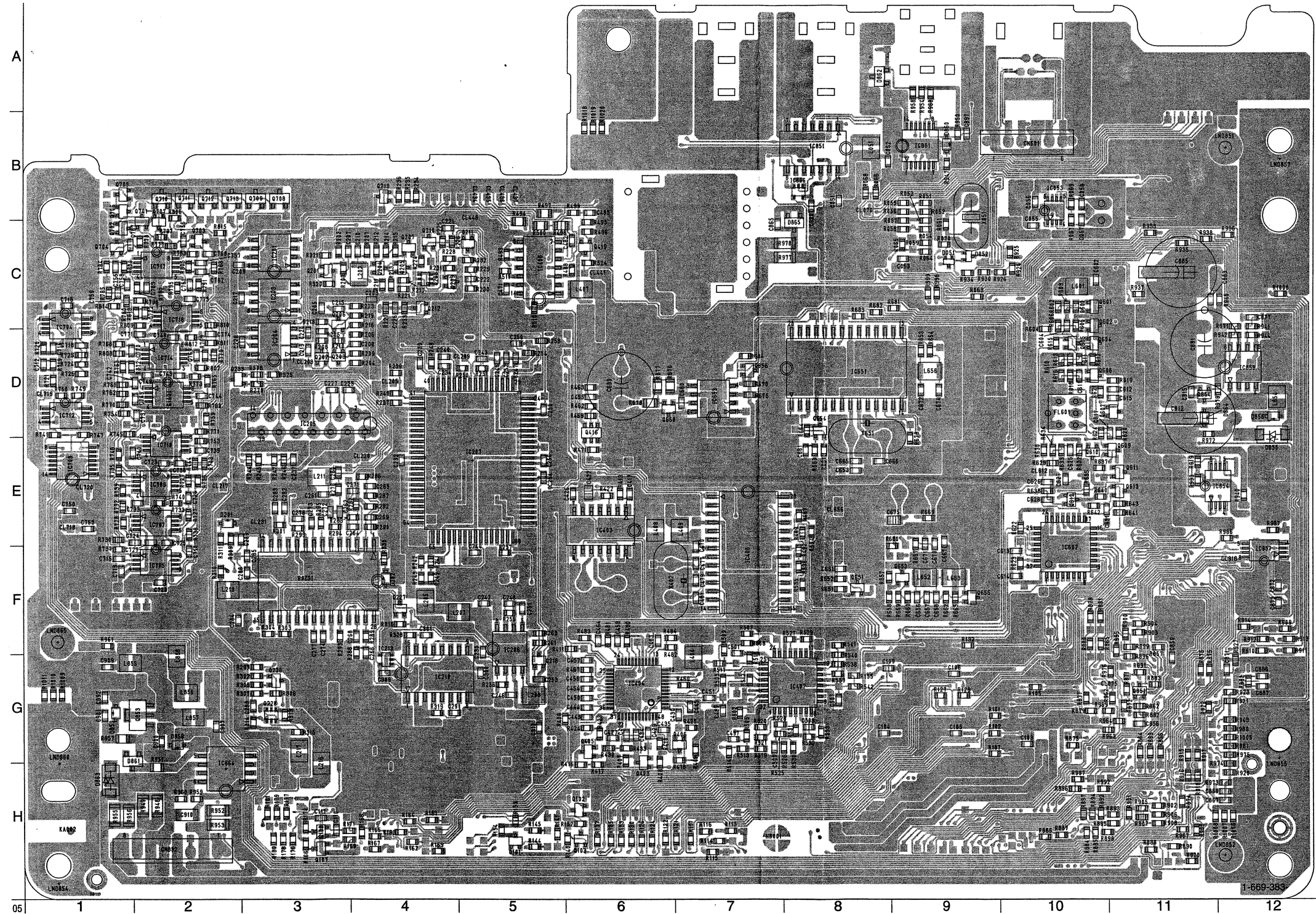
VA-102 BOARD (SIDE A)



- **For Printed Wiring Board.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



VA-102 BOARD(SIDE B)




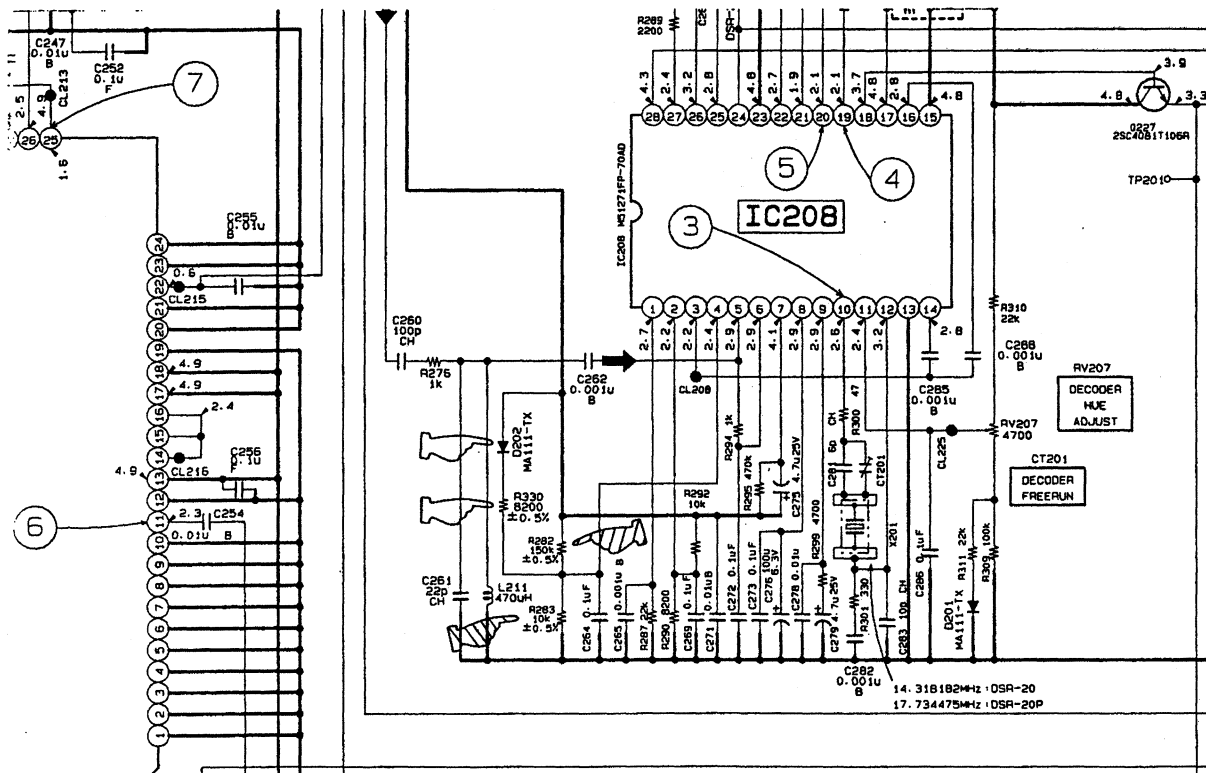
VA-102 BOARD (SIDE B)

CN601	B-9	Q211	C-4
CN852	H-2	Q212	C-4
		Q213	B-4
D051	C-9	Q216	F-5
D052	C-9	Q226	F-3
D201	E-2	Q227	F-4
D855	D-12	Q228	G-3
D856	D-12	Q233	D-2
D858	G-2	Q403	G-6
D859	G-1	Q405	G-6
D861	G-1	Q406	G-6
D862	A-8	Q416	D-6
D863	G-1	Q419	C-5
D864	D-11	Q601	C-10
		Q602	C-10
IC053	B-10	Q604	C-10
IC201	C-3	Q605	C-10
IC203	C-3	Q606	D-10
IC204	C-3	Q607	D-10
IC205	D-3	Q613	E-10
IC206	F-5	Q651	F-8
IC207	D-4	Q653	F-8
IC208	F-3	Q654	D-8
IC403	E-6	Q655	F-9
IC404	F-6	Q656	D-7
IC405	E-7	Q658	D-6
IC406	C-5	Q701	B-2
IC407	F-7	Q702	B-1
IC602	E-10	Q703	C-2
IC651	D-8	Q704	C-1
IC653	D-7	Q705	B-1
IC704	C-1	Q706	B-1
IC705	E-2	Q707	B-2
IC707	E-2	Q708	B-3
IC708	E-1	Q709	B-3
IC709	E-2	Q710	B-2
IC710	D-2	Q711	B-2
IC712	D-1	Q712	B-2
IC713	D-2	Q713	B-2
IC714	D-2	Q851	G-10
IC717	C-2	Q853	G-1
IC718	C-2	Q854	D-11
IC851	B-8		
IC854	E-11		
IC857	E-12		
IC858	D-11		
IC861	B-8		
IC864	G-2		
IC866	B-7		
Q101	H-5		
Q102	H-5		
Q103	H-5		
Q107	H-3		
Q108	H-3		
Q201	C-3		
Q202	D-3		
Q203	D-3		
Q204	C-4		
Q205	C-4		
Q206	C-3		
Q207	C-4		
Q208	C-4		
Q209	C-4		
Q210	C-4		


 : Points added parts.
 : Points changed parts.

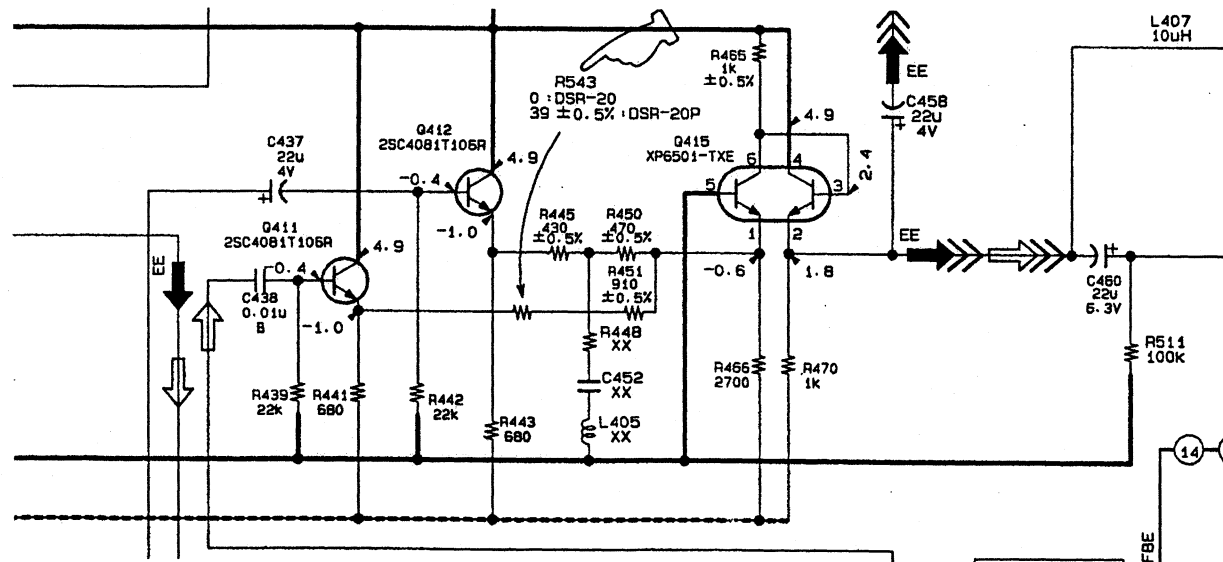
VA-102 (VIDEO IN) SCHEMATIC DIAGRAM (Service Manual Page 4-61)
 – Ref. No.: VA-102 board; 1,000 series – (Location I – L, 11 –17)

• Part No. 1-669-381-13




VA-102 (VIDEO OUT) SCHEMATIC DIAGRAM (Service Manual Page 4-64)
 – Ref. No.: VA-102 board; 1,000 series – (Location K – M, 10 –14)

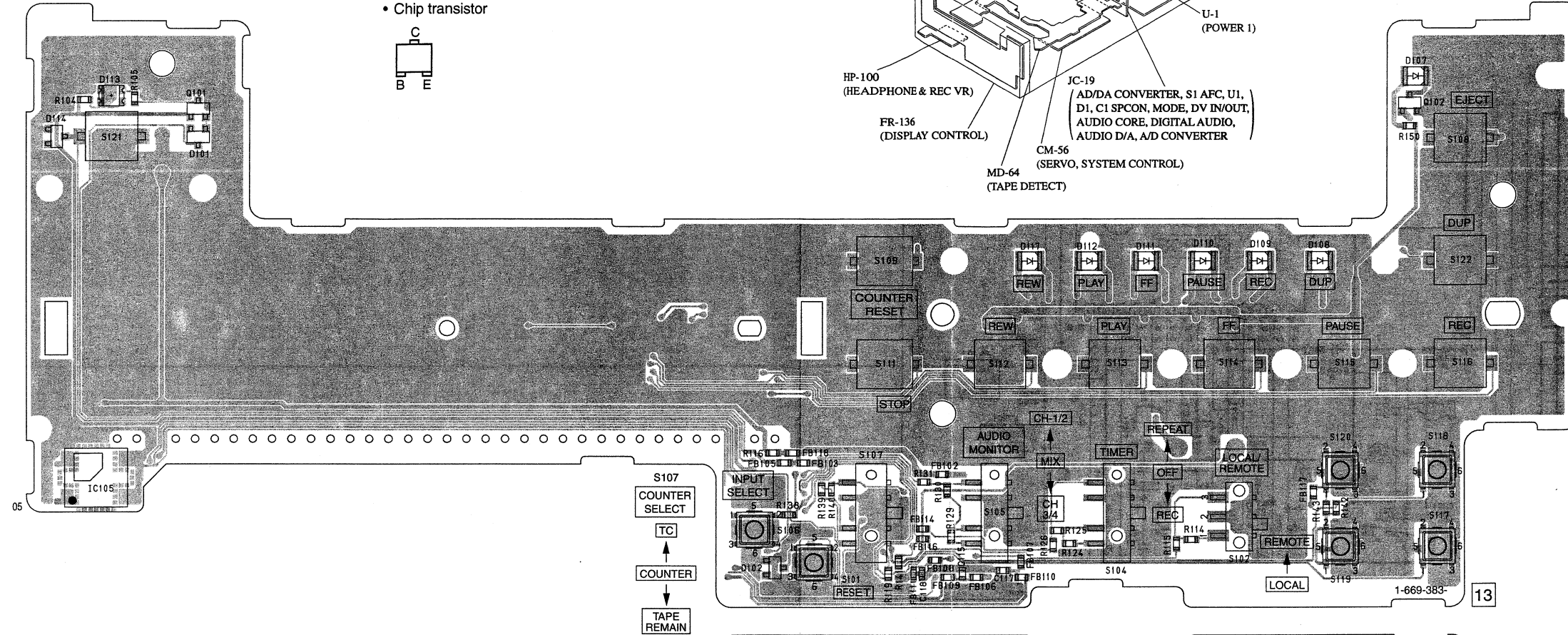
• **Part No. 1-669-381-13**




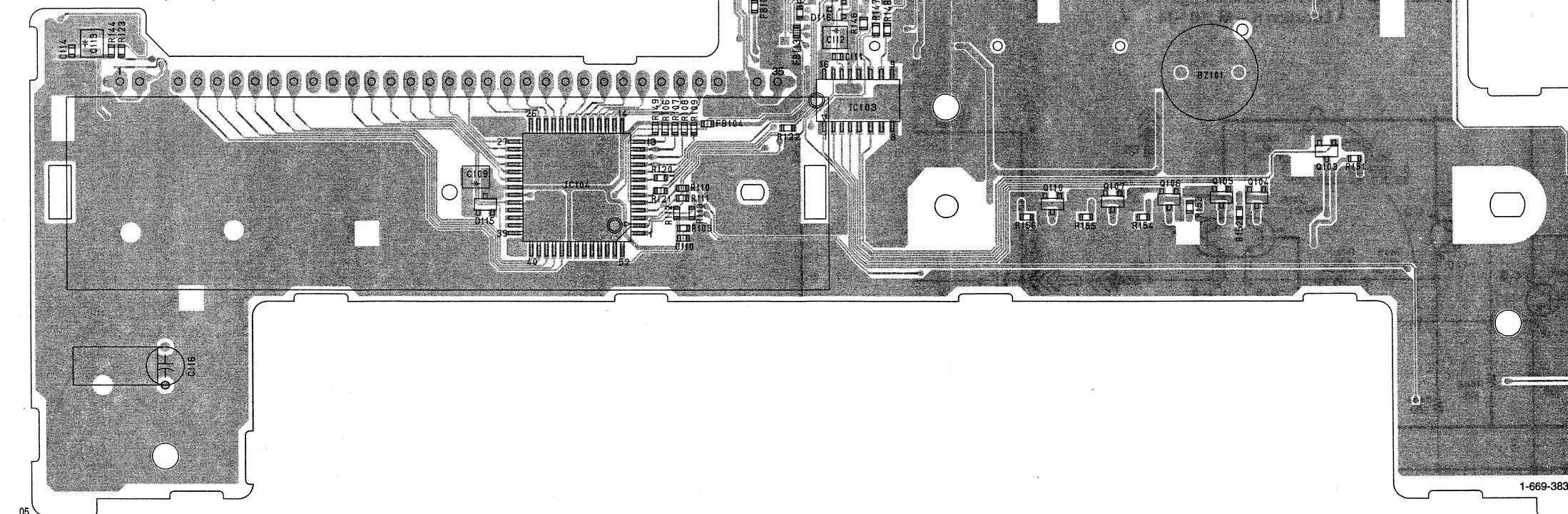
FR-136 (DISPLAY CONTROL) PRINTED WIRING BOARD

– Ref. No.: FR-136 board; 5,000 series –

- **For Printed Wiring Board.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are few cases that the part isn't mounted in this model is printed on this diagram.
- Chip transistor



FR-136 BOARD(SIDE B)



SECTION 5 ADJUSTMENTS

5-3. VIDEO SECTION ADJUSTMENTS

3-5. VIDEO SYSTEM ADJUSTMENTS

3-5-4. General Adjustments

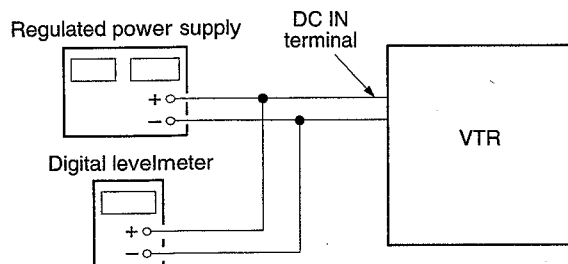
5. Battery Down Adjustment and Confirmation

Mode	Stop
Signal	Any
Test point	Displayed data on page 5, address 2A (LCD display of the adjustment remote commander)
Measuring tool	Adjusting remote commander
Adjustment page	E
Adjustment address	1D, 1E, 1F

Note 1: Make sure that the BEEP on the Menu screen is set to "ON".

Connection of Equipment:

Connect a regulated power supply and a digital voltmeter to the DC IN terminal.



Adjustment Method:

- 1) Adjust the output voltage of regulated power supply so that a digital voltmeter displays 11.0 ± 0.05 V.
- 2) Select page: 5 address: 2A, and read displayed data on the adjusting remote commander, and assume it as D_0 .
- 3) Set D_0 to page: E address: 1D, and press the PAUSE button on the adjusting remote commander.
- 4) Convert " D_0 " read in 2) to decimal notation, and obtain D_0' .
- 5) Calculate D_1' , D_2' using the following equations (decimal notation calculation).

$$D_1' = D_0' - 6$$

$$D_2' = D_0' - 12$$
- 6) Convert D_1' to hexadecimal notation, and obtain D_1 .
- 7) Set D_1 to page: E address: 1E, and press the PAUSE button on the adjusting remote commander.
- 8) Convert D_2' to hexadecimal notation, and obtain D_2 .
- 9) Set D_2 to page: E address: 1F, and press the PAUSE button on the adjusting remote commander.
- 10) Confirm the display and operation of the fluorescent display tube, when the voltage input from DC IN terminal is lowered from 12 V.

Input of DC 12 V : Normal operation
 Input of DC 10.8 V: Beep sounds and "dc Lo" is displayed.
 Input of DC 10.3 V: Beep sounds and the standby mode is activated after 2 seconds.
- 11) Further lower the voltage, and check the voltage when STBY indicator (red LED) turns off.

Specification: The power relay must turns off when $V_{dc} = 9.0 \text{ V} - 9.5 \text{ V}$.
- 12) On the contrary, raise the voltage, and check the voltage when STBY indicator (red LED) turns on.

Specification: The power relay must turns on when $V_{dc} = 10.5 \text{ V} - 11.0 \text{ V}$.

SECTION 6 REPAIR PARTS LIST

• DIFFERENT PARTS LIST

6-2. ELECTRICAL PARTS LIST

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Page	-11				-12			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
6-24	*	A-7073-470-A	RE-32 BOARD, COMPLETE		*	A-7073-470-A	RE-32 BOARD, COMPLETE	
6-25	D115	8-719-108-12	DIODE RD9.1EW		D115	8-719-421-59	DIODE MA3130WA-TX	

• VA-102 Board: Part No. 1-669-381-12

Page	-11							-12						
	Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
6-30	*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)					*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)				
	*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)					*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)				
6-32	C617	1-216-829-11	METAL CHIP	4.7K	5%	1/16W		C617						
6-33	C922							C922	1-164-227-11	CERAMIC	0.022uF	10%	25V	
	C999	1-161-055-00	CERAMIC	0.022uF	10%	50V		C999						
6-34	IC857	8-759-489-27	IC S-3513AEFS-TB					IC857	8-759-538-14	IC S-3513BEFS-TB				
6-39	R618	1-216-850-11	METAL CHIP	270K	5%	1/16W		R618						
	R620	1-216-845-11	METAL CHIP	170K	5%	1/16W		R620						
6-41	R1034							R1034	1-216-850-11	METAL CHIP	270K	5%	1/16W	
	R1035							R1035	1-216-845-11	METAL CHIP	170K	5%	1/16W	
	R1036							R1036	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	

• VA-102 Board: Part No. 1-669-381-13

Page	-12							-13						
	Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
6-30	*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)					*	A-7067-133-A	VA-102 BOARD, COMPLETE (DSR-20)				
	*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)					*	A-7067-129-A	VA-102 BOARD, COMPLETE (DSR-20P)				
6-34	D202							D202	8-719-404-49	DIODE MA111				
6-37	R282	1-216-833-11	METAL CHIP	10K	5%	1/16W		R282	1-218-899-11	RES, CHIP	150K	0.5%	1/16W	
	R283	1-216-833-11	METAL CHIP	10K	5%	1/16W		R283	1-216-871-11	METAL CHIP	10K	0.5%	1/16W	
6-38	R330							R330	1-218-869-11	RES, CHIP	8.2K	0.5%	1/16W	
6-39	R543							R543	1-216-864-11	METAL CHIP	0	5%	1/16W	(DSR-20)
								R543	1-211-983-11	METAL CHIP	39	0.5%	1/16W	(DSR-20P)

031093

DSR-20/20P

RMT-DS20

SP0724

SONY

SERVICE MANUAL

US Model
Canadian Model
DSR-20
AEP Model
DSR-20P

SUPPLEMENT-2

File this supplement with the service manual.
(98-023)

• Change of VA-102 board adjustments.

SECTION 5 ADJUSTMENTS

5-3. VIDEO SECTION ADJUSTMENTS

3-5. Video System Adjustments

3-5-3. VA-102 Board Adjustment (Service Manual Page 5-75 to 5-81)

Name of Adjustment	Main Point of Change
1. AGC Adjustment	Specified Value
2. Analog E-E Y Signal Output Level Adjustment	Change from adjustment to check./Change of adjustment method. (to method 3)
3. Analog E-E Chroma Signal Output Level Adjustment	Change from adjustment to check./Change of adjustment method. (to method 4)
4. Analog E-E VIDEO Signal Output Level Check	Change from check to adjustment./Change of adjustment method. (to method 2)
5. Decoder VXO Freerunning Frequency Adjustment	None
6. Video Input Y/C Separation Adjustment	
(1) Y Signal Output Level Adjustment	Specified Value
(2) Chroma Signal Output Level Adjustment	None
7. Decoder HUE adjustment	None
8. REC Y Level Adjustment	Change from S VIDEO input to VIDEO input.
9. REC CR Level Adjustment	Change from S VIDEO input to VIDEO input.
10. REC CB Level Adjustment	Change from S VIDEO input to VIDEO input.
11. Encoder Freerunning Frequency Adjustment	None
12. Playback Y Level Check	None
13. Playback Chroma Level Adjustment	None
14. Playback Burst Level Adjustment	None

* All of VA-102 board adjustments are described in this supplement-2 whether there are some changes or not.

1. AGC Adjustment (VA-102 Board)

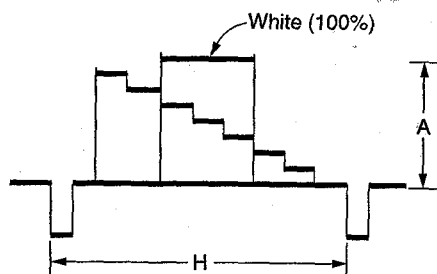
Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Pin ⑬ of IC205 (CL220)
Measuring Instrument	Oscilloscope
Adjustment Element	RV202
Specified Value	A=1.428±0.02 V (NTSC) A=1.400±0.02 V (PAL)

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV202.

For NTSC model



For PAL model

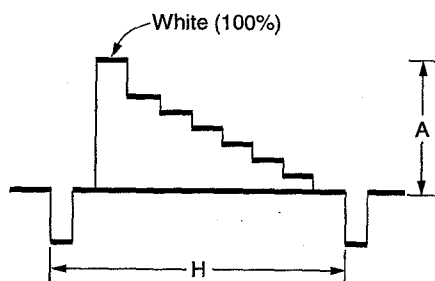


Fig. 5-3-13.

2. Analog E-E VIDEO Signal Output Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑨ of IC401 (CL434)
Measuring Instrument	Oscilloscope
Adjustment Element	RV401, RV404
Specified Value	A=0.714±0.01 V (NTSC) A=0.700±0.01 V (PAL) B=280±10 mV (NTSC) B=300±10 mV (PAL)

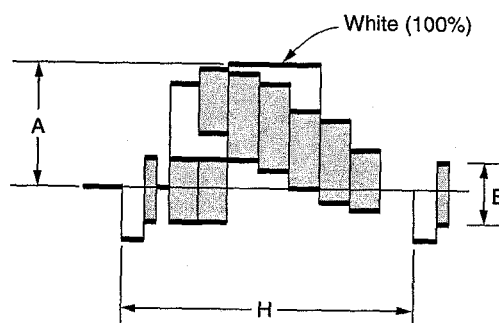
Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the video output terminal using a 75 Ω resistor.
75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV401.
- 2) Set the burst signal level (B) to the specified value using RV404.

For NTSC model



For PAL mode

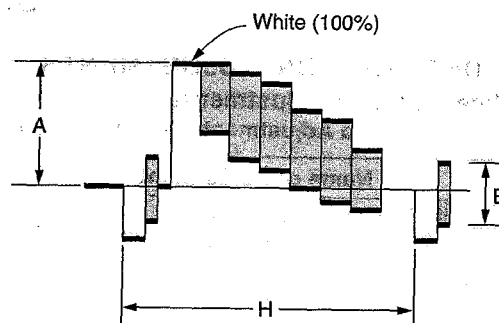


Fig. 5-3-14.

3. Analog E-E Y Signal Output Level Check (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑬ of CN401 (CL436)
Measuring Instrument	Oscilloscope
Specified Value	A=0.714±0.02 V (NTSC) A=0.700±0.02 V (PAL)

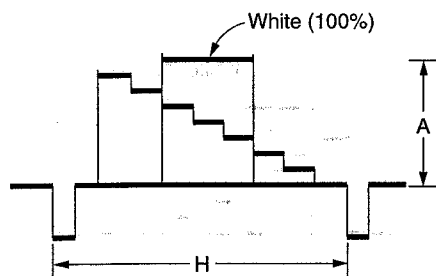
Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the Y signal terminal of the S video output terminal using a 75 Ω resistor.
75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

1) Check that the Y signal level (A) is the specified value.

For NTSC model



For PAL model

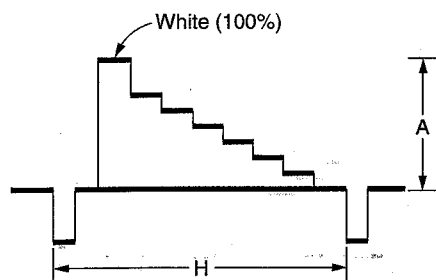


Fig. 5-3-15.

4. Analog E-E Chroma Signal Output Level Check (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑬ of IC401 (CL435)
Measuring Instrument	Oscilloscope
Specified Value	A=286±20 mV (NTSC) A=300±20 mV (PAL)

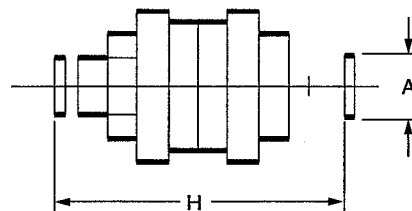
Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the Chroma signal terminal of the S video output terminal using a 75 Ω resistor.
75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

1) Check that the burst signal level (A) is the specified value.

For NTSC model



For PAL model

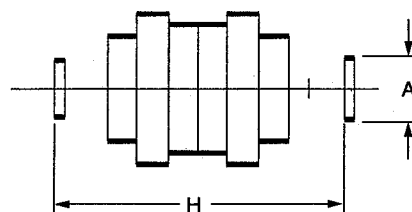


Fig. 5-3-16.

5. Decoder VXO Freerunning Frequency Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 2) (Chroma signal OFF)
Measurement Point	TP201 (CL210)
Measuring Instrument	Frequency counter
Adjustment Element	CT201
Specified Value	$f=3579545 \pm 30$ Hz (NTSC) $f=4433618 \pm 20$ Hz (PAL)

Note 1: Connect the frequency counter via high input impedance equipment such as an oscilloscope.

Note 2: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the VXO OSC frequency (f) to the specified value using CT201.

6. Video Input Y/C Separation Adjustment (VA-102 Board)

(1) Y Signal Output Level Adjustment

Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Pin ① of IC202 (CL202)
Measuring Instrument	Oscilloscope
Adjustment Element	RV203
Specified Value	$A=0.714 \pm 0.01$ V (NTSC) $A=0.700 \pm 0.01$ V (PAL)

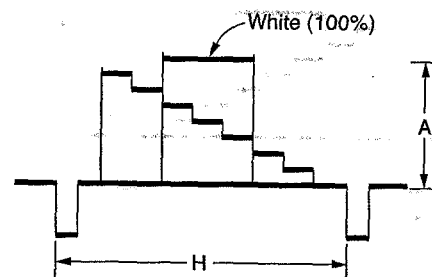
Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Note 2: Terminate the video output terminal using a 75 Ω resistor.
75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV203.

For NTSC model



For PAL model

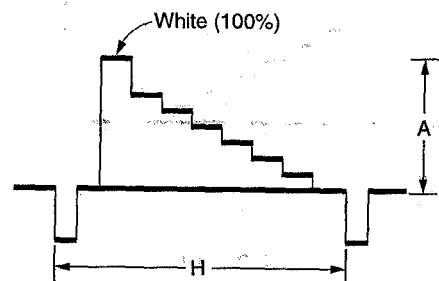


Fig. 5-3-17.

(2) Chroma Signal Output Level Adjustment

Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Emitter of Q202 (CL203)
Measuring Instrument	Oscilloscope
Adjustment Element	RV201
Specified Value	A=286±10 mV (NTSC) A=300±10 mV (PAL)

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

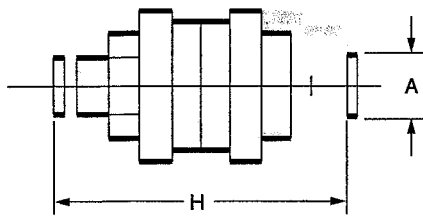
Note 2: Terminate the video output terminal using a 75 Ω resistor.

75 Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

1) Set the burst signal level (A) to the specified value using RV201.

For NTSC model



For PAL model

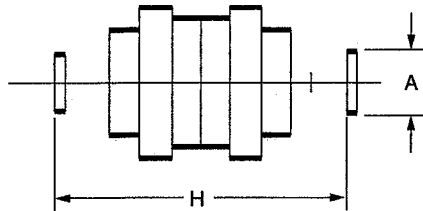


Fig. 5-3-18.

7. Decoder HUE Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ③ of IC102 (CL144)
Measuring Instrument	Oscilloscope
Adjustment Element	RV207
Specified Value	A=B=C

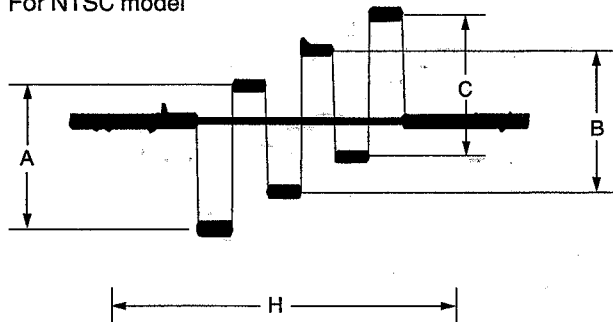
Note 1: Set data: 00 to page: 5, address: 38

Note 2: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

1) Set the amplitude (A), (B), (C) to the same level using RV207.

For NTSC model



For PAL model

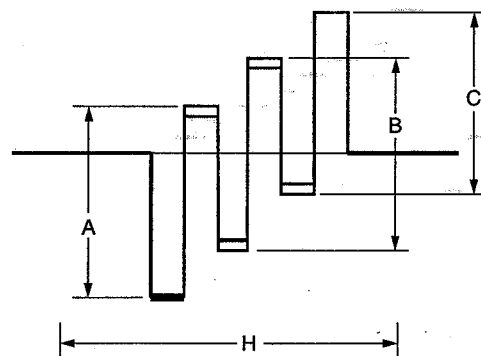


Fig. 5-3-19.

8. REC Y Level Adjustment (VA-102 Board)

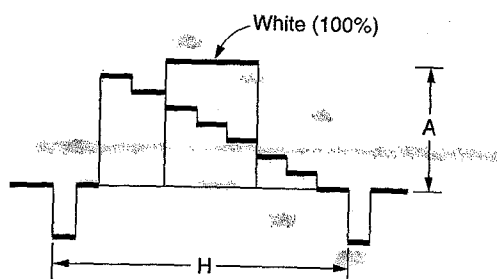
Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Pin ⑫ of IC102 (CL142)
Measuring Instrument	Oscilloscope
Adjustment Element	RV205
Specified Value	$A=1.55\pm0.02$ V

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the Y signal level (A) to the specified value using RV205.

For NTSC model



For PAL mode

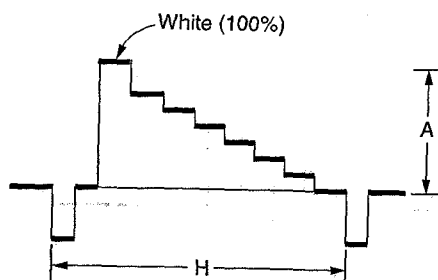


Fig. 5-3-20.

9. REC CL Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Pin ⑩ of IC102 (CL143)
Measuring Instrument	Oscilloscope
Adjustment Element	RV204
Specified Value	$A=1.25\pm0.02$ V (NTSC) $A=1.20\pm0.02$ V (PAL)

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the CR signal level (A) to the specified value using RV204.

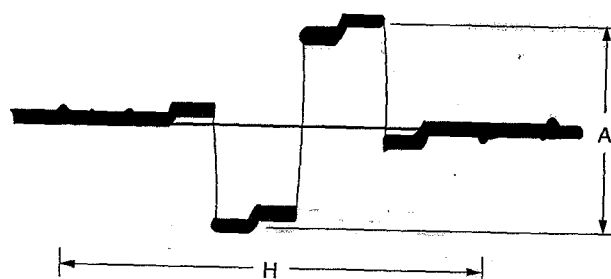


Fig. 5-3-21.

10. REC CB Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (VIDEO input) (Note 1)
Measurement Point	Pin ⑧ of IC102 (CL144)
Measuring Instrument	Oscilloscope
Adjustment Element	RV206
Specified Value	$A=1.20\pm0.02$ V

Note 1: Set "VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the CB signal level (A) to the specified value using RV206.

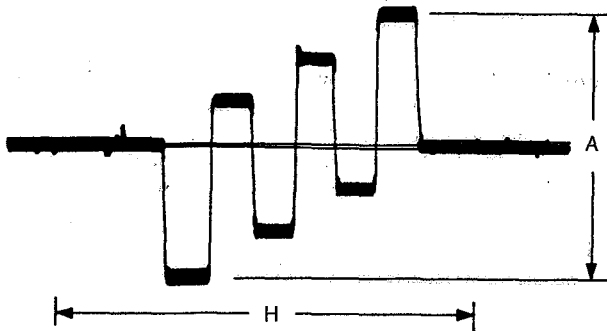


Fig. 5-3-22.

11. Encoder Freerunning Frequency Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 2)
Measurement Point	TP401 (CL426)
Measuring Instrument	Frequency counter
Adjustment Element	CT401
Specified Value	$f=14318182\pm100$ Hz (NTSC) $f=17734475\pm100$ Hz (PAL)

Note 1: Connect the frequency counter via high input impedance equipment such as an oscilloscope.

Note 2: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- 1) Set the oscillation frequency (f) to the specified value using CT401.

Measurement Point

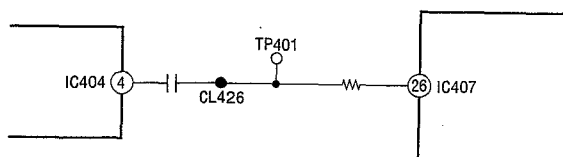


Fig. 5-3-23.

12. Playback Y Level Check (VA-102 Board)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑬ of CN401 (CL436)
Measuring Instrument	Oscilloscope
Specified Value	$A=0.83\pm0.02$ V (NTSC) $A=0.825\pm0.02$ V (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/PAL: DCR-VX1000E and enter it to the DV terminal. (How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Note 2: Perform this check after confirming that the specified value in the following adjustment of the JC-19 board has been satisfied.

1. Playback Y Signal Level Adjustment.

Check method:

- 1) Check that the white (75%) signal level (A) is the specified value.

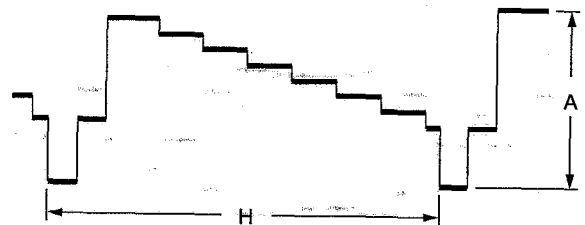


Fig. 5-3-24.

13. Playback Chroma Level Adjustment (VA-102 Board)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑩ of CN401 (CL435)
Measuring Instrument	Oscilloscope
Adjustment Element	RV406
Specified Value	A=670±10 mV (NTSC) A=660±10 mV (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/PAL: DCR-VX1000E and enter it to the DV terminal. (How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Note 2: Perform this adjustment after confirming that the specified value in the following adjustment of the JC-19 board has been satisfied.

1. Playback CR Signal Level Adjustment.
2. Playback CB Signal Level Adjustment.

Adjustment method:

- 1) Set the red signal level (A) to the specified value using RV406.

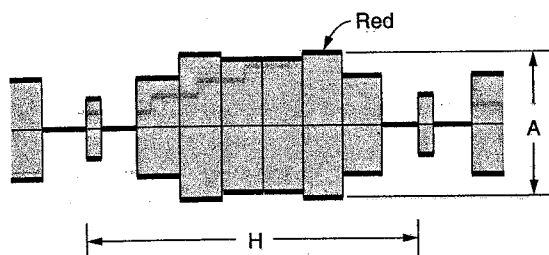


Fig. 5-3-25.

14. Playback Burst Level Adjustment (VA-102 Board) (PAL model only)

Mode	Recording
Signal	DV input (Note 1)
Measurement Point	Pin ⑩ of CN401 (CL435)
Measuring Instrument	Oscilloscope
Adjustment Element	RV402
Specified Value	A=300±10 mV (PAL)

Note 1: Generate color bar signal with NTSC: DCR-VX1000/PAL: DCR-VX1000E and enter it to the DV terminal. (How to generate color bars: Connect the adjusting remote commander to the NTSC: DCR-VX1000/PAL: DCR-VX1000E, and set data: 09 to page: 5, address: 02. After adjustment, be sure to return the data to "00".)

Note 2: Perform this adjustment after confirming that the specified value in the following adjustment of the JC-19 board has been satisfied.

1. Playback CR Signal Level Adjustment.
2. Playback CB Signal Level Adjustment.

Adjustment method:

- 1) Set the burst signal level (A) to the specified value using RV402.

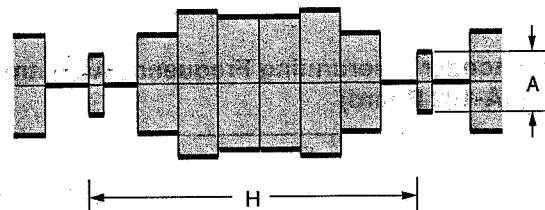


Fig. 5-3-26.

SP0724

DSR-20/20P

RMT-DS20

SONY




SERVICE MANUAL

US Model
Canadian Model
DSR-20
AEP Model
DSR-20P

CORRECTION-1

Please correct your service manual.

Subject : Adjustments correct

-  : Points added portion.
 : Points deleted portion.
 : Points changed portion.

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENT (Service manual Page 5-63)

5. Modification of C, D, E, Page Data

If the C, D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

- Before changing the data, select page: 0, address: 01, and set data: 01.
- New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note: If copy the data built in the different model, this set may not operate.

- When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
- Check that the data of adjustment addresses the initial value. If not, change the data to the initial value.
- After completing "Modification of C, D, E, F Page Data", select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3-5-3. VA-102 Board Adjustment (Service Manual Page 5-79)

9. REC CR Level Adjustment (VA-102 Board)

Mode	E-E
Signal	Color bar (S VIDEO input) (Note 1)
Measurement Point	Pin ⑩ of CN102 (CL143)
Measuring Instrument	Oscilloscope
Adjustment Element	RV204
Specified Value	A=1.25±0.02 V (NTSC) A=1.20±0.02 V (PAL)

Note 1: Set "S VIDEO" mode with the INPUT SELECT button on the front panel.

Adjusting method:

- Set the CR signal level (A) to the specified value using RV204.

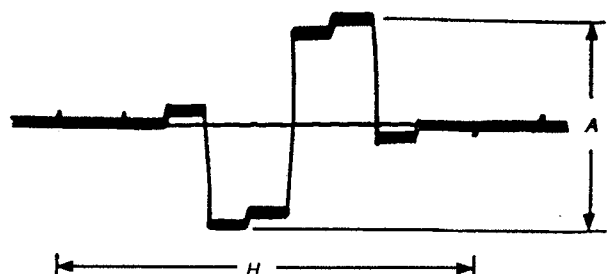


Fig. 5-3-21.

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENT (Service Manual Page 5-64)

6. Page D Address List

Note 1: Fixed data 1: Initialized data.
Fixed data 2: Modified data.

Address	Initial Value	Remark
00 to 0F		
10 to 12	Fixed data 1 (Initial data)	
13	Fixed data 2 (Changed data. Read from same model and copy it.)	
14	Fixed data 1 (Initial data)	
15 to 18	Fixed data 2 (Changed data. Read from same model and copy it.)	
19	Fixed data 1 (Initial data)	
1A to 1E	Fixed data 1 (Initial data)	
1F	Fixed data 2 (Changed data. Read from same model and copy it.)	
20 to 29	Fixed data 1 (Initial data)	
2A, 2B	Fixed data 1 (Initial data)	
2C to 2F	Fixed data 2 (Changed data. Read from same model and copy it.)	
30 to 32	Fixed data 1 (Initial data)	
33	59	IC422 27 MHz XTAL fo adjustment
34	19	Playback CR signal level adjustment/ Encoder R-Y input level adjustment
35	37	Playback CB signal level adjustment/ Encoder B-Y input level adjustment
36	18	Playback Y signal level adjustment/ Y output level adjustment
37 to 39	Fixed data 1 (Initial data)	
3A to 3F	Fixed data 1 (Initial data)	
40	Fixed data 1 (Initial data)	
41	00	Playback burst level adjustment
42	Fixed data 2 (Changed data. Read from same model and copy it.)	
43	Fixed data 1 (Initial data)	
44 to 46	Fixed data 2 (Changed data. Read from same model and copy it.)	
47 to 49	Fixed data 1 (Initial data)	
4A	Fixed data 2 (Changed data. Read from same model and copy it.)	
4B to 4F	Fixed data 1 (Initial data)	

Table 5-2-3.

3-5-5. BIST Check (Service Manual Page 5-85)

2. Record System Check

Note: Perform "Record System Check" successively (with BIST check tape in playback status.)

1) Enter the following data.

Note: Press the PAUSE button each time the data is set.

Page	Address	Data
4	41	01
4	0F	02
4	0E	01
4	40	01
4	0F	0A
4	40	00
4	40	01
4	0F	0E
4	40	00
4	40	01
4	0F	8E
4	40	00

- 2) With the HOLD switch on adjusting remote commander turned ON, eject the BIST check tape, and insert a record tape instead.
- 3) Set the REC mode.

IC401 (U1) Record System Check

- 4) Set data: 08 to page: 4, address: 11, and press the PAUSE button.
- 5) Set data: 01 to page: 4, address: 42, and press the PAUSE button.
- 6) Set data: 07 to page: 4, address: 13, and press the PAUSE button.
(Data automatically returns to "00".)
- 7) Set data: 00 to page: 4, address: 42, and press the PAUSE button.
- 8) Set data: 00 to page: 4, address: 11, and press the PAUSE button.
- 9) If IC401 (U1) → IC411 (D1) record system is normal, the following data are displayed on page: 4, address: 16, 17.

Page	Address	Data
4	17	05
4	16	80